

From the Department of Public Health Sciences  
Karolinska Institutet, Stockholm, Sweden

## **Embodiment of inequality**

### **The translation of childhood social inequality to alcohol related health disparities later in life**

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**Karolinska  
Institutet**

Stockholm 2015

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ISBN 978-91-7676-069-7

Printed by Eprint AB 2015

Embodiment of inequality  
The translation of childhood social inequality to alcohol  
related health disparities later in life

THESIS FOR DOCTORAL DEGREE (Ph.D.)

by

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Don't get used to inequalities

WHO Commission on Social Determinants of Health



# ABSTRACT

This thesis aims to increase knowledge regarding the translation of childhood social inequality to alcohol related disparities later in life. Four empirical studies focus on different dimensions of childhood social inequality and identify a clear connection between childhood social disadvantage and alcohol related disorders in young adulthood. The studies are based on data from Swedish national registers which include a large number of social, demographic and health related variables for the entire population born between 1973 and 1984 (n= 948 518). This cohort is followed from birth to adulthood using Cox and logistic regression analyses to measure the association between the childhood factors and alcohol related hospital care later in life.

Low socioeconomic position, low school performance and experience of childhood household dysfunction were associated with alcohol related disorders to varying degrees in both men and women. School performance in particular was strongly related to the outcome and adjustment for school marks led to a complete attenuation of the socioeconomic gradient in alcohol related disorders.

Alcohol related disorders result from a combination of two factors: high exposure and high vulnerability to alcohol. National public health surveys report very modest socioeconomic differences in total consumption levels and prevalence of binge drinking, which does not reflect the large alcohol related health inequalities presented and discussed in this thesis. Instead, this thesis emphasises social inequality in vulnerability to alcohol as a plausible mechanism explaining the results. A privileged socioeconomic background without any experience of household dysfunction provides children with good opportunities for school success, which paves the way for a good higher education and a well-paid profession. The many resources that such a person accumulates over the lifetime may serve as a buffer that compensates for the potentially adverse health effects of high alcohol consumption. In contrast, a person from disadvantaged social circumstances may be more likely to face poverty, stress and general health problems which can increase the probability that high alcohol consumption will lead to illness.

The relationship between childhood social inequality and alcohol related health disparities later in life can be conceptualised as a form of embodiment of social privilege and disadvantage. During this process the physical and social environment is biologically incorporated and may materialise as health conditions. The embodiment of inequality makes individuals more or less vulnerable to the adverse consequences of alcohol and may partly explain the alcohol related health inequalities found in Sweden.

## LIST OF SCIENTIFIC PAPERS

- I. **Gauffin K**, Hemmingsson T, Hjern A. The effect of childhood socioeconomic position on alcohol-related disorders later in life: a Swedish national cohort study. *J Epidemiol Commun H.* 2013 November 1, 2013;67(11):932-8.
- II. **Gauffin K**, Vinnerljung B, Hjern A. School performance and alcohol-related disorders in early adulthood: a Swedish national cohort study. *Int J Epidemiol.* 2015 Jun;44(3):919-27.
- III. **Gauffin K**, Vinnerljung B, Hjern A, Björkenstam E. Childhood household dysfunction, social inequality and alcohol related disorders in young adulthood: a Swedish national cohort study. Submitted manuscript.
- IV. **Gauffin K**, Berg L, Allebeck P, Hemmingsson T, Hjern A. Childhood social disadvantage and later alcohol related problems in men and women: a Swedish national cohort study. Submitted manuscript.



# CONTENTS

1	Introduction.....	1
2	Background.....	3
2.1	Health inequality .....	3
2.2	Alcohol related disorders .....	4
2.3	Social inequality.....	5
2.4	Previous research.....	6
2.5	Contribution and relevance of this work.....	10
3	Aims and research questions .....	13
3.1	Aim.....	13
3.2	Research questions.....	13
4	Theoretical framework.....	15
4.1	A capability approach to social inequality .....	15
4.2	An intersectionality approach to social inequality.....	19
4.3	The link between social inequality and health disparities .....	20
4.4	Exposure and vulnerability.....	24
4.5	A life course perspective .....	25
5	Materials and methods .....	29
5.1	Study design and data sources .....	29
5.2	Measures .....	31
5.2.1	Explanatory variables.....	32
5.2.2	Outcomes.....	33
5.2.3	Co-variables .....	34
5.3	Statistical analysis.....	34
5.4	Ethical considerations.....	37
6	Results.....	39
6.1	Main effects .....	39
6.2	Mediation and effect modification .....	42
6.3	Social inequality and gender .....	44
7	Discussion.....	49
7.1	Main findings.....	49
7.2	Root of the problem.....	50
7.3	Embodiment of inequality.....	53
7.4	Consequences of alcohol related health inequalities .....	58
7.5	Strengths, weaknesses and methodological considerations.....	61
7.5.1	External validity.....	61
7.5.2	Selection bias.....	62

7.5.3	Information bias.....	62
7.5.4	Confounding.....	63
7.5.5	Statistical models.....	63
7.6	Conclusion .....	63
8	Implications for research, policy and practice .....	65
8.1	Are alcohol related health inequalities unfair? .....	65
8.2	Targeting alcohol related health inequalities .....	66
8.3	Prevention over the life course .....	67
8.3.1	Fight the root of the problem .....	69
8.3.2	Prevent the embodiment of inequality .....	71
8.3.3	Cure the sickness and alleviate its adverse effects .....	72
8.4	Recommendations for policy and future research .....	73
8.5	“There’s lots to learn, but so much more to unlearn” .....	75
9	Summary in Swedish/Sammanfattning på svenska .....	77
9.1	Resultat.....	77
9.2	Diskussion.....	79
9.3	Slutsatser.....	81
10	Acknowledgements .....	83
11	References .....	85

## LIST OF ABBREVIATIONS

ACE	Adverse childhood experience
ADHD	Attention deficit hyperactivity disorder
AUDIT	Alcohol use disorder identification test
CHD	Childhood household dysfunction
CI	Confidence interval
DALY	Disability adjusted life years
DUI	Driving under influence of alcohol
GWAS	Genome-wide association study
HR	Hazard ratio
ICD	International Classification of Disease
IMF	International Monetary Fund
LGBT	Lesbian Gay Bisexual Transgender
OECD	Organisation for Economic Co-operation and Development
OR	Odds ratio
PIN	Personal identification number
SCB	Statistiska Centralbyrån (Statistics Sweden)
SEI	Socioekonomisk indelning (socioeconomic classification system)
SEP	Socioeconomic position
WHO	World Health Organization
YLD	Years lost due to disability
YLL	Years of life lost



# 1

## Introduction

---

In his *City* book series, the novelist Per Anders Fogelström tells the stories of several Swedish families and their lives in the capital city (1). The first book begins in 1860 and follows the poor and hardworking characters through their unforgiving existences. For some, life changes in an instant. Adoption into a wealthy family gives one boy a life that his birth parents can only dream of, while a sudden death orphans a young girl, leaving her with the heavy and solitary burden of caring for her younger siblings. For others, life changes gradually. The country is transformed as the decades pass, giving some an opportunity to build a good life despite years of childhood deprivation and poverty. Others watch their lives fall to pieces; hard day labour, poverty, sickness and alcohol misuse lead only to deep misery, for themselves and their children.

Social inequality is a theme commonly found in Swedish literature, and these stories often address the importance of alcohol and its effect on individuals, families and society at large. Since the 1860s of Fogelström's books, Sweden has experienced fundamental societal changes that have diminished both social inequality and alcohol misuse as well as their impact on population health. Nonetheless, these issues are not problems relegated to the past; there are still large social gaps in life expectancy and health, and alcohol related disorders continue to be a severe public health problem.

Unlike fictional and biographical narratives that often focus on individual fates, this thesis makes use of large register data materials on an entire Swedish national cohort, and thereby approaches the topics of social inequality and alcohol misuse at a population level. In acknowledgement of all the individual stories behind the abstract numbers and statistics, this thesis seeks to contribute to the knowledge around the relationship between childhood social inequality and alcohol related health disparities later in life.



# 2

## Background

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This chapter will provide some short definitions of health inequality, alcohol related disorders and social inequality but without elaborating on the way these concepts are measured, as this will be discussed in the methods section. It will also give an overview of previous studies and conclude with an estimation of what this work adds to the research in the field.

### 2.1 Health inequality

The research area of health inequalities touches on hot topics. The fact that some people are sicker and die earlier than other people may in itself not be alarming, but if they do so because of grave social injustice, this tends to attract attention. The figures on our paychecks, the years spent in school and the zip codes of our neighbourhoods are numbers that look very different for different people, and they translate to other, perhaps more concrete statistics: differences with regard to days spent in hospital, months spent with severe sickness or disability and years of life expectancy. Health inequalities are a very tangible manifestation of more abstract social inequalities, and that is what this thesis is concerned with.

The terminology that we use is of great importance since it also implies an answer to the question: Are health inequalities unfair? This is a politically controversial question that researchers in the field have to ask themselves and it will be elaborated upon in a following chapter. In this thesis, health inequalities will be conceptualised in accordance with the definition by Paula Braveman (2):

*A health disparity/inequality is a particular type of difference in health or in the most important influences on health that could potentially be shaped by policies; it is a difference in which disadvantaged social groups (such as the poor, racial/ethnic minorities, women, or other groups that have persistently experienced social disadvantage or discrimination) systematically experience worse health or greater health risks than more advantaged groups*

The concepts 'health inequalities' and 'health disparities' are to some extent contextually embedded, as public health researchers in Europe tend to speak about health inequalities, usually referring to differences between socioeconomic groups, whereas American researchers often refer to health disparities between racial/ethnic groups (2, 3). The definition by Braveman however, makes no distinction between health inequalities and health disparities and the concepts are used interchangeably (as they are in this thesis). Yet a health inequality is something more than a health difference between two individuals or groups. Basically all epidemiological research comparing one population with another is about health differences. Health inequality however, is a type of health difference that can be linked to social advantage and disadvantage and that can be targeted by policies. In light of this definition, Braveman describes 'health equity' as the political goal to eliminate such inequalities.

## **2.2 Alcohol related disorders**

Alcohol consumption is widespread in Sweden with about 70 percent of the adult population having consumed alcohol in the past 12 months (4). In the past 10 years, the total per capita consumption has been between 9 and 10 litres of pure alcohol per year, which is high compared to the global average of 6.2 litres (in year 2010), but lower than most other European countries. A certain proportion of drinkers will have problems related to their alcohol consumption, and the size of this proportion depends on the way the problems are measured. In Sweden, researchers and medical professionals usually distinguish between three different forms of alcohol related problems: alcohol risk use, alcohol misuse and alcohol dependence. Alcohol *risk use* is present if the weekly consumption exceeds 140 gram of pure alcohol for women or 210 gram for men (approximately equivalent to two or three bottles of wine). Another way to establish alcohol risk use is by the Alcohol Use Disorders Identification Test (AUDIT), originally developed by the World Health Organization (WHO), which includes ten questions that are used to identify heavy consumption and alcohol related health problems. According to the first definition, about 13.4 percent of men and 8.1 percent of women in Sweden consume alcohol at a risk use level. Using the AUDIT definition, about 20 percent of men and 13 percent of women are risk consumers (5). The risk use measure points to alcohol consumption that is likely to induce adverse health effects in the long-term or to immediate problems related to alcohol intoxication. The term *alcohol misuse* is frequently used to signify ongoing alcohol consumption over at least 12 months, despite awareness of the harms that alcohol causes, including drinking in highly inappropriate circumstances (e.g. before driving) (6). Finally, *alcohol dependence* is used to describe a clinical condition in populations with high tolerance, withdrawal symptoms and



substantial and continuous alcohol consumption. In this thesis, 'alcohol dependence' and 'alcohol addiction' will be used interchangeably.

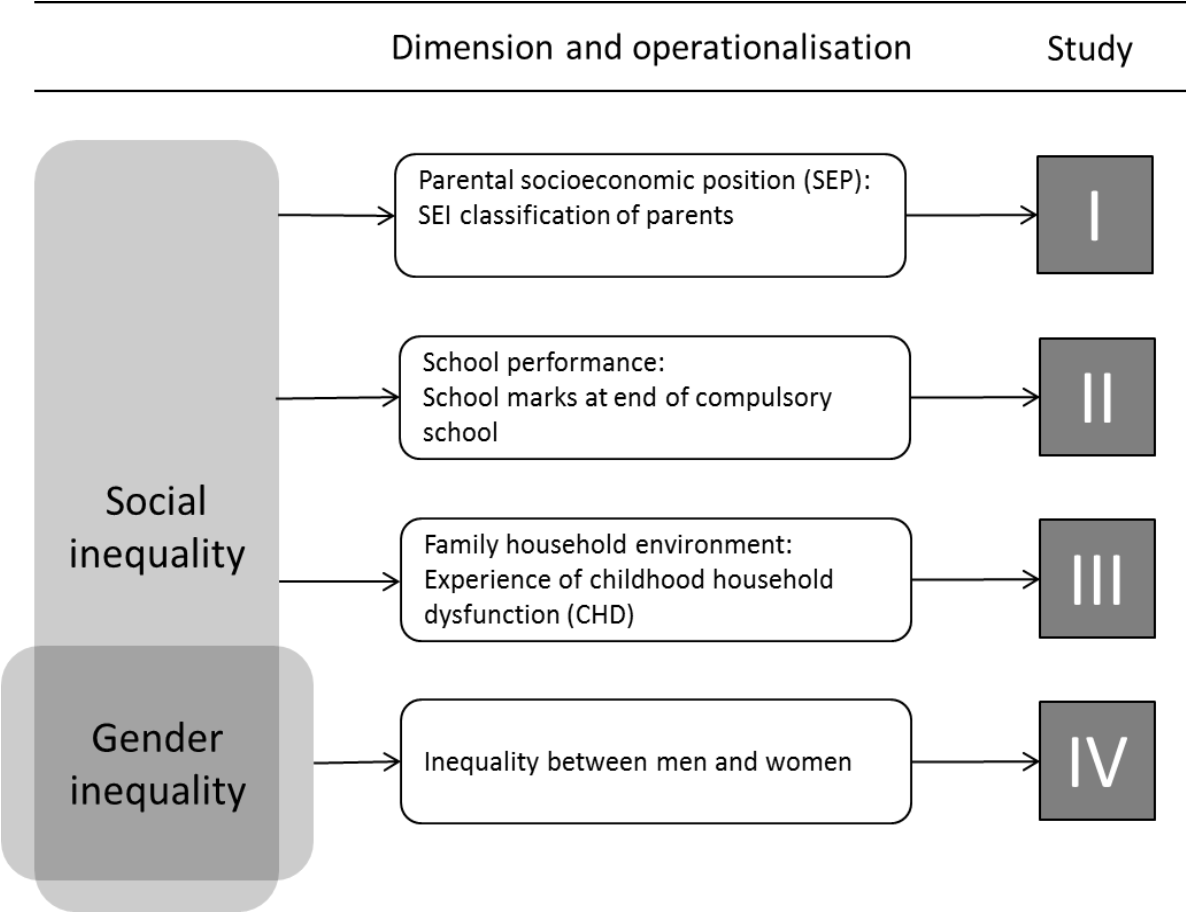
In addition to this three-level measure of alcohol related problems, the public health literature often refers to alcohol related disorders or alcohol related harm to refer to the adverse health consequences of risk use, misuse and dependence. The contribution of alcohol use to the global burden of disease increased sharply between 1990 and 2010, making alcohol related disorders one of today's leading causes of disease and premature death worldwide (7). Over 200 diseases and injury conditions are attributable to alcohol and many of them require professional medical care in order to prevent severe illness or premature death (8). Besides the fact that alcohol related disorders have a significant impact on the general burden of disease, they are also one of the most significant contributors to social inequalities in health. A Swedish study from 2005 showed that 'alcohol addiction' was a major source of socioeconomic differences in disability adjusted life years (DALYs) which is a combination of two measures: years of life lost (YLL) and years lived with disability (YLD). In relative terms, alcohol addiction was shown to be the single most important contributor to social health inequalities in both men and women in Sweden (9).

### **2.3 Social inequality**

Social inequality can be understood in various ways. A narrow definition may emphasise the different socioeconomic circumstances under which people live, with socioeconomic position (SEP) commonly being defined by educational, occupational and income related variables (10). Swedish studies often make use of the SEI classification system that was developed by Statistics Sweden and includes information on occupation and position in the work place (11). Comparing socioeconomic groups is a recognised way to measure social inequality in adult groups, but when focusing on early life, a broader definition of the concept may point to other social factors which create unequal opportunities for children to grow up and lead good and fulfilling lives. School performance and family household environment are two such factors that in addition to parental SEP will have long-term consequences for the child's future (12, 13). Whilst acknowledging that there is also individual variance with regard to these factors, the systematic interdependencies between school performance, household environment and parental SEP call for a discussion of the underlying structural inequality behind the phenomena. Additionally, social inequality is in no way isolated from other forms of inequality based on gender, race/ethnicity or sexuality, but rather interacts with them in complex ways. Gender inequality refers to unequal opportunities, outcomes and treatment of people because of their gender and is highly intertwined

with various forms of social inequality. The theoretical underpinnings of social and gender inequality will be discussed in a subsequent chapter of this thesis, but the idea of a multidimensional concept of social inequality and its interaction with gender inequality is shown in figure 1.

**Figure 1: Dimensions of inequality**



### 2.4 Previous research

Since the WHO Commission of Social Determinants of Health published its report ‘Closing the Gap in a Generation’ in 2008, the interest in research and political strategies to pursue health equity seems to have increased. In the eight years since the report was published, the search term ‘health inequalities’ now generates 10,803 hits on the Scopus database for peer-reviewed literature, compared to 4,661 hits for the same search term in the eight years before the report. The report was also the starting point for a number of international, national and local initiatives on health inequalities and social determinants of health in the European Union (14) and in countries like England (15), Norway (16), Brazil (17), Denmark (18), Slovenia (19), and most recently Sweden (20).

The Swedish National Commission was preceded by a number of local Swedish initiatives (21-24).

Given the increasing interest in health inequalities and the significant contribution of alcohol to the global burden of the disease, it is unsurprising that there is a large body of literature on alcohol related health inequalities. Many researchers focus on the relationship between alcohol related disorders and social inequality in adult life. These types of studies deliver important results but often lead to the common discussion around causation and selection. Does the social disadvantage cause the alcohol related disorder or do the alcohol problems lead to social drift? Other studies focus on the relationship between social inequality in childhood and alcohol problems later in life. The main advantage of such a longitudinal approach is that it introduces a clear temporality to the relationship between explanatory and outcome variables – the alcohol problems in adulthood cannot have an effect on social disadvantage in childhood. To be certain about the timely order of events is a good starting point in epidemiological studies, although it is by no means sufficient to prove a causal relationship, as will be further discussed in the methods section.

The relationship between childhood SEP and alcohol related problems later in life has been addressed in a large number of studies including a comprehensive systematic review (25). The review concluded that there is inconsistent evidence regarding this relationship and recommends further research to be conducted. Indeed, looking at the studies published before and after the review, no clear picture emerges. Whereas some studies report that low childhood SEP is related to heavy drinking and alcohol related health problems, others find an association between childhood social advantage and alcohol outcomes later in life. Much of this ambiguity seems to depend on the alcohol measure used. The studies can be categorised into three different groups depending on the alcohol outcome studied: studies on frequent drinking, studies on heavy/binge drinking and studies on health consequences of alcohol consumption. The studies on consumption deliver conflicting results, with frequent and heavy alcohol consumption being associated with both high (26-29) and low (30-36) childhood SEP. Other studies find no clear association at all between childhood SEP and alcohol consumption patterns (37-40). The relationship between childhood SEP and alcohol related health problems later in life is clearer; many studies find an association between low childhood SEP and alcohol related health problems in adulthood (26, 30, 31, 34, 35, 41, 42). These findings underline the importance of distinguishing between alcohol consumption and consequences of drinking, as they are not interchangeable and the association between them may rely on other factors. In addition to peer-reviewed articles in scientific journals, there are public health surveys delivering data on the relationship between

social factors and alcohol consumption and its consequences. In the National Public Health Surveys, the Swedish Public Health Agency (Folkhälsomyndigheten) collects information on total consumption and incidence of intoxication in a national representative sample of the Swedish population. Using a number of socioeconomic indicators (education, employment status and income), the survey reports no socioeconomic differences in women's drinking and a slightly higher frequency of risk consumption in men with lower SEP (43, 44). Looking more specifically at the youth population, the Stockholm school survey monitors risk behaviours including drinking in students aged 14-17 in Stockholm County. The survey data is aggregated to the neighbourhood level and reports higher prevalence of youth drinking in affluent parts of the capital region (45). Similar results have been found in the city of Gothenburg (46).

The public health relevance of school performance and educational attainment has been demonstrated in a large number of studies and there are also some studies focusing more specifically on alcohol consumption and alcohol related health. Similar to the studies on childhood SEP and alcohol related problems later in life, the literature on the effect of school performance is somewhat inconsistent. This seems to be strongly connected to the way the explanatory variable is defined. The research looking at school performance, as indicated by school mark average or teacher assessment, usually finds an association between poor performance and alcohol use in adolescence (47-49). Other studies that focus on educational attainment present contradictory results by showing that high educational aspirations sometimes were found to be connected to high alcohol consumption. The literature on college attendance in particular shows that this may be associated with high alcohol consumption and binge drinking (50-52). However, college attendance has also been showed to decrease the risk for alcohol related disorders, again demonstrating the important distinction between alcohol consumption and its health effects (53). The majority of studies focus on school performance/educational attainment and adolescent drinking, and often the reciprocal effects are discussed (47). Only a few studies take a longitudinal perspective examining the relationship between school performance and alcohol related problems later in life. An Australian study with this design was able to show that low school performance was associated with both higher self-reported consumption levels and alcohol related health problems in adulthood (54).

Childhood household dysfunction (CHD) is a measure developed by a group of American researchers at the Centers for Disease Control and Prevention and Kaiser Permanente's Health Appraisal Clinic in San Diego. Since the 1990s these researchers have published more than 50 articles on the effect of adverse childhood experiences (ACE) on health in childhood, adolescence and adulthood (13). ACE is a concept that

consists of three sub-measures: 1) child abuse, including physical, sexual and psychological abuse; 2) child neglect, including emotional and physical neglect; 3) CHD, indicated by household substance misuse, household mental illness, parental separation or divorce, incarceration of a household member or domestic violence. The studies show that ACE is common (around two thirds of the population experienced at least one indication of ACE) and its adverse effect on health is strong and cumulative. A large number of different health outcomes have been studied in relation to ACE including chronic pain, ischemic heart disease, smoking, depression, obesity, and alcohol misuse (55). Other studies using other data and alternate definitions of ACE have been able to provide results for contexts as diverse as the USA, Sweden, Finland, Philippines, Germany, UK, Japan and Saudi Arabia (56-63). Finally, the range of populations that have been studied is wide; a quick online search resulted in the discovery of studies of pregnant women, homeless people, students, deaf adults, incarcerated males and rock stars (64-69). Many of these studies focus on alcohol related disorders as the health outcome of interest, and similar to the work on parental SEP and school performance, they usually rely on self-reported data and small or mid-sized population materials.

With a few exceptions (70, 71), social inequalities in health imply that disadvantaged groups have worse health than the advantaged population. Gender inequalities in health are different; in spite of many male privileges, men as a group often live shorter lives than women (72). Health is not only measured in life expectancy, and it is important to stress the many studies showing that women suffer from worse health than men do, often as a result of hazardous female-dominated housework and labour, pregnancy complications and discrimination and violence against women and girls (73, 74). Nonetheless, men die earlier, and many countries that are characterised by a particularly large gender gap in life expectancy also stand out in terms of (male) alcohol consumption (75). Research investigating the extent to which social inequality differentially affects men's and women's health delivers mixed results. Some studies find that there are no significant gender differences with regard to the association between socioeconomic variables and health (76, 77), but this may differ depending on age, health outcome and socioeconomic indicator (78). Another study suggests that education has a stronger effect on mortality in men and self-rated health in women. Given the fact that men have higher mortality and women report worse health, the authors conclude that education closes the gender gap in both mortality and self-rated health (79). Alcohol use and misuse could be one of the health issues with different socioeconomic patterns for men and women. One large study comparing male and female drinking in different educational groups and different European countries concludes that the relationship between education and alcohol consumption differs for men and women, but that this difference is dependent on context and the measure of

alcohol consumption (37). The authors conclude that for some middle-European countries (Germany, France, Switzerland, Netherlands, Austria) heavy drinking is slightly more common in women with high education and abstention more common in women with low education. Middle-European men show a reversed pattern with low education being associated with heavier drinking. In the Nordic countries, the authors found weaker associations between education and drinking in general, and the relationship was quite similar for men and women.

## **2.5 Contribution and relevance of this work**

Social inequality and alcohol related health have been studied from different perspectives, using a wide range of variables, methods, data materials and populations. Given increasing social inequalities and the substantial contribution of alcohol related disorders to the Swedish and global burden of disease, this is a topic that warrants continuous attention. Apart from the important work of following up previous research and comparing results from other countries to the Swedish context, there are some characteristics of this thesis that will make it a valid contribution to the comprehensive literature on the topic.

The majority of the studies on alcohol use and alcohol related health problems rely on self-reported data. Questionnaires and interviews are a very important source of information, especially with regard to alcohol consumption, but self-reported data comes with some limitations. The data may be biased for several reasons, e.g. the person may under- or overestimate their own alcohol consumption or choose not to disclose any information about drinking behaviours. Non-response leading to missing data is a general problem in health surveys, but potentially even more so in surveys on alcohol consumption, given the stigma attached to alcohol misuse. As such, missing data, especially if combined with a small-sized study cohort, may lead to limited power and difficulty in producing clear results. To overcome these limitations, Scandinavian researchers may turn to the national registers and create large datasets based on register indicators. In our studies, we make use of Swedish register data for entire birth cohorts and have as such no problem with power, attrition or bias due to self-report. As already mentioned, most studies make use of a quite narrow definition of social inequality, usually referring to differences between socioeconomic groups. This thesis will attempt to broaden the understanding of social inequality in childhood and discuss additional factors that will contribute to the chances of a child to lead a good life. The fact that we are able to witness how these chances develop for a child over its life course is another advantage related to the national registers. The longitudinal design of the studies in which we follow the population from birth to early middle age will hopefully

contribute to important findings around the relationship between childhood social inequality and alcohol related problems later in life. Finally, many studies look at consumption and drinking habits without considering that similar levels of consumption may have very different consequences for different people. In contrast, we study the adverse health effects of alcohol consumption, which will hopefully give this work some concrete public health relevance.





# 3

## Aims and research questions

---

The thesis has a general aim and a number of specific research questions.

### 3.1 Aim

The overall aim of this thesis is to increase the knowledge regarding how childhood social inequality translates to alcohol related health disparities later in life.

### 3.2 Research questions

The four empirical studies cover different dimensions of inequality and the interplay between them. Each study addresses a number of specific research questions:

- 1) Socioeconomic position
  - a) How is childhood socioeconomic position associated with alcohol related disorders in young adulthood?
- 2) School performance
  - a) How is school performance at the end of compulsory school associated with alcohol related disorders in young adulthood?
  - b) To what extent does this relationship depend on the gender and socioeconomic background of the study subject?
- 3) Family environment
  - a) How is childhood household dysfunction associated with alcohol related disorders in young adulthood?
  - b) To what extent is there a cumulative effect of experiencing multiple indicators of childhood household dysfunction on alcohol related disorders in young adulthood?

- c) To what extent does this relationship interact with the socioeconomic background of the study subject?

#### 4) Gender

- a) What is the incidence of alcohol related disorders, acute alcohol intoxications and alcohol related criminality in Swedish men and women?
- b) How is childhood socioeconomic position associated with alcohol related problems in men and women respectively and to what extent is this association explained by school performance and parental psychosocial problems?
- c) To what extent does gender and socioeconomic background interact with regard to the risk of alcohol related problems in young adulthood?

# 4

## Theoretical framework

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The purpose of theory is to make sense of things that we do not understand. Guided by the simple question ‘what is ...?’, we may use theory to reason around the abstract concepts used in our research. We may also use theory to be able to understand the complex processes which link the concepts that we try to define. Finally, a theoretical framework is necessary in order to make sense of the empirical findings in our studies. This section will present a number of theoretical approaches with the purpose to make sense of the following:

1. social inequality
2. the process linking social inequality to health disparities later in life
3. the mechanisms by which this process happens

The section will move from broad theoretical approaches discussing the nature of social inequality to more applied theoretical models focusing on the mechanisms by which social inequality in childhood translates to health disparities later in life.

### 4.1 A capability approach to social inequality

In the book *Inequality reexamined*, the economist and philosopher Amartya Sen builds his central argument around one central question: ‘equality of what?’ (80). A common approach to this question is to address the categories that are used to operationalise inequality. Are we talking about different social classes, and if so, how is ‘social class’ defined? Are we talking about classes that can be defined with regard to their relationship to the means of production in a Marxian sense? Or are we turning to Max Weber and discuss groups that differ in wealth, prestige and power? Or are we interested in Pierre Bourdieu’s sociological understanding of capital according to which people differ depending on their access to economic, cultural and social resources (81, 82)? Or are we perhaps more interested in other categories such as gender, race/ethnicity or sexuality and the ways inequality is reproduced along these

dimensions? Amartya Sen takes a slightly different approach by only peripherally addressing these possible ways of classification. He rather tries to answer the question 'equality of what?' by focusing on the outcome: what is it that some people have and some people do not have, and how does this create social inequality that affects these people and their children?

Sen argues that every normative approach to social organisation which has survived long enough to still be considered as a viable option has called for equality of *something*. Even theories and ideologies that strongly oppose egalitarianism in terms of equal distribution of resources support equality in spaces that are considered central to the theory in question. For example, advocates of the libertarian school of thought may disapprove of redistribution of goods, but they argue that no person has more right than another person to a number of legal and political rights concerning individual liberty. To generate equality in one space may lead to inequality in another, which is the reason for the fact that the schools of thought often stand in conflict with each other. For example, the measures that are taken to achieve equality in income will be unequally distributed for individuals in the population (taxation level will depend on gross income).

There are countless types of resources and spaces in life that we could refer to when we are speaking about inequality: income, wealth, education, influence, social networks, power and civil rights, to name a few. Depending on which resources or spaces we regard as particularly important, we can choose from a wide spectrum of philosophical paradigms focusing on one or two of these inequality dimensions. One paradigm that has come to dominate much of modern Western political discourse is the idea of 'equality of opportunity'. The meaning of equality of opportunity may seem obvious; everyone should be given the same opportunity to achieve desirable goals. Phenomena that obstruct equal opportunities, e.g. discrimination, are to be forbidden by law. However, Amartya Sen criticises the idea of equality of opportunity for being too narrow when practically applied. Sen argues that equality of opportunity always refers to equal access to a number of *specific* means or enjoyment of certain *pre-defined* rights. Because the equality of opportunity does not consider the full range of differences with regard to human diversity or resource access, the concept cannot refer to equality of *overall* opportunity to live a desirable life. Another commonly discussed, in some sense competing, equality principle focuses on the 'equality of resources' or outcomes (83, 84). Sen also criticises the equality of resources perspective; it fails to consider the fact that people, because of their diversity, will have different possibilities to convert resources into utilities. The simple example of giving a bicycle to a person who can walk and to a person in a wheelchair makes this point overly clear. One could easily argue

that this is the reason why we have money and other more abstract resources that could be converted into utilities that make sense to the person given their characteristics. Yet, we can think of situations in which a person, due to personal, social or environmental factors (Sen calls them 'conversion factors'), may not be able to trade abstract resources for utilities. Due to mental impairment, a person may be unable to independently convert their money into needed utilities. In a highly patriarchal gender regime, a woman may not be allowed to convert her money into the utility of house ownership or travel without a man's consent. After severe crop failure, an individual may be unable to buy food simply because there is none in the market to which they have access (85). The notion that we should not strive for equality of resources, since resources are only means to an end, is shared by theorists focusing on 'equality of welfare'. Welfare, in this context, refers to enjoyment of a desirable state of being. What is considered desirable is at the discretion of the individual, and we ought to focus, not on the resources, but on the welfare or utility that the resources bring the person. This overlaps to some extent with the utilitarian approach according to which the best action is the one that maximises summed-up utility. Amartya Sen joins the critical voices that point to the inadequate consideration of social justice within the equality of welfare approach and utilitarianism. An orthodox utilitarian would argue that it is *better* to give money to the person who is able to maximise the sum-total of utility; it would be better to give the money to the man in the patriarchal society, because unlike the woman, he can freely convert it into utilities (86). Sen argues that we need to consider non-utility information including social and moral principles, such as human rights, before making such a decision. Equal welfare or utility may be reached in groups with very different demands; some people will require excessive amounts of resources before they are content, whereas others who have adjusted their expectations to the bleakness of their reality may remain silent and happy as long as the sun shines in the sky. This should not guide a socially just principle of equality. Gerald Cohen writes in a comment on Sen's work: 'The fact that a person has learned to live with adversity, and to smile courageously in the face of it, should not nullify his claim to compensation' (87).

So if the traditional 'equality of opportunity' approach is too narrow and particular, if the 'equality of resources' is too inconsiderate of human diversity leading to unequal utility of resources, and if the 'equality of welfare' and the utilitarian approaches are blind to social justice, what does Amartya Sen suggest instead? Since the 1980s, much of Sen's work builds on the 'capability approach', and in *Inequality reexamined*, this perspective is discussed with consideration to social inequality. Sen introduces the concepts of 'functionings' and 'capabilities'. Functionings are 'beings or doings', they can refer to a condition (e.g. being well-nourished, educated, sick, healthy, part of a network) or to an activity (e.g. travelling, voting, consuming, working). The capabilities

are an individual's *real opportunity* or the *freedom* to achieve functionings. In contrast to a negative or passive understanding of freedom (freedom from something), Sen uses a positive or active definition (freedom to achieve some desirable goal). Capabilities as freedoms refer then to the existence of valuable options or real opportunities (not only pre-defined or formal opportunities) that are available to the individual to pursue a functioning. Consequently, 'equality of capabilities' is an efficient situation in which individuals are given equal real opportunities to achievement. Efficiency, in this context, refers to the economic concept of pareto efficiency or pareto optimality, which represents a state of resource allocation in which a situation for an individual cannot be enhanced without making another person worse off (88).

Which functionings are worth striving for? As mentioned, Sen rejects theories focusing exclusively on subjective utility as he claims that we also need to consider more objective social and moral criteria. The subjective utility is important, but cannot be the only factor taken into account. In *Inequality reexamined*, Sen's answer is quite vague: 'A person's capability to achieve functionings that he or she has reason to value provides a general approach to the evaluation of social arrangements, and this yields a particular way of viewing the assessment of equality or inequality' (80). Something a person 'has reason to value' implies some account of public reasoning, as stated by Ingrid Robeyns in a comment on the capability approach. But Robeyns also argues that the elusiveness of Sen's answer points to the fact that it has been difficult to construct a full account of social justice on the basis of the capability approach. Returning to the research field of alcohol related health inequalities, let us argue, for the purpose of this thesis, that a life without alcohol related disorders is a functioning that a person has reason to value. Which capabilities are needed to live a life without alcohol related disorders? This is a question that needs to be guided by empirical research. As we will see, there are a number of social factors that will endorse such capabilities and which are also potentially achievable by policies through legal rights and resource allocation. Although expressing critique over the equality of resources perspective, Sen never disputed that resources may play a vital role in the process of generating capabilities. This being said, the resources have no value in their own right, but rather only to the extent they can contribute to capabilities. Some resources will have a fairly similar effect independent of the target person; the resource food will make a person capable to eat, which will lead to the functioning of being well-nourished. For other functionings, different resources will have different effects for different people. This reflects the discussed distinction between resources and utility; in order to be capable to finish primary school some students may need more resources than others. Equality of capability in the school context would mean that all students, to the extent this is possible and efficient, should be made capable to achieve the functioning of graduating primary school or secondary

school or whatever educational level has been publicly agreed upon as something that we have reason to value. This approach goes further than the traditional idea of equality of opportunity. It is not only about formal opportunity to education, but rather that each student should be given a 'real opportunity' that considers his or her particular potential to develop this desired capability.

Sen's capability approach is useful when using a broader definition of social inequality in childhood. Social inequality is not only found in the comparison of children from different socioeconomic circumstances, but rather there are many factors contributing to inequality of capabilities in children, some of which will be discussed in this thesis. One issue that is of particular interest when it comes to social inequality in children is the question of personal responsibility. Can the individual be held responsible for their own situation, and if so, does this release society from the moral duty to support them? These questions are politically contested and the answers are diverse, especially if speaking about adults. There is a much stronger consensus regarding social inequality in children. The absolute majority of theoretical, ideological and political approaches to social inequality do not hold children responsible for their own social situation. This consensus will be used as a valuable starting point for the discussion on policy implications that will follow later.

## **4.2 An intersectionality approach to social inequality**

As mentioned in the beginning of the previous section, Sen's approach to equality does not focus on the social categories that are commonly used to identify privileged and disadvantaged groups. However, Sen acknowledges that for practical reasons, we are not able to cover all forms of human diversity in analyses of inequality, but rather we need to focus on the 'significant diversities' and intergroup variations. From Sen's perspective, the significant diversities are those diversities that create systematic differences with regard to the freedoms that the groups in question can enjoy. He briefly addresses social class, race and gender as categories that create these kinds of systematic differences, and he also touches upon the ways in which these categories may interact (80). Without using this terminology, Sen enters the research area of intersectionality studies. The intersectionality approach is used in many academic disciplines and demonstrates how multiple social categories may interact and create new experiences of disadvantage, discrimination and oppression (89). The approach derives from the critique expressed by female African-American academics regarding the exclusion of Black women from the mainstream feminist debate (focusing on White women) as well as the antiracist discourse (focusing on Black men). Although the phenomenon has existed for a long time, the term 'intersectionality' was first

introduced by legal scholar Kimberlé Crenshaw in the early 1990s (90). The intersectionality approach points out that the adverse experiences related to singular social categories do not simply add up, but rather result in an extra dimension of disadvantage. In other words, the intersectional disadvantage experienced by a Black woman could have new characteristics, cover wider areas of life and be of a more severe type, and is therefore not comparable to experiences of White women or Black men. The same logic could be applied to other combinations of disadvantage, such as the experiences of working-class women, homosexual Black men, lesbians with a physical disability and so on.

Applying the intersectionality perspective to Sen's capability approach is helpful in identifying groups with severe disadvantages regarding their freedom to pursue functionings. Both the intersectionality perspective and the capability approach could be of great use in epidemiological research on social inequalities in health. The intersectionality approach gives us tools to understand how the combination of disadvantages may create health problems with a magnitude that exceeds the sum of the individual adversities. Sen's proposal combines universal equality approaches with consideration of human diversity and the special needs that may emerge from that. In doing so, it provides health researchers with a useful theoretical basis for the development of general and targeted public health interventions. The following section departs from the philosophical literature on social inequality and uses theoretical research from the public health field when discussing the process how social inequality is transformed into health inequalities.

### **4.3 The link between social inequality and health disparities**

How do social factors influence health related outcomes over the life course? To answer this question is one of the most central and also most complex tasks in social epidemiology and public health research (91). It points to a process in which the abstract concepts discussed in the previous section become tangible. The challenge is to understand how inequality of opportunities, resources, welfare and capabilities translate into health inequalities.

As an academic discipline, public health science is young. Adding this to the field's orientation towards practical work and its focus on methodological issues, the theoretical foundation of public health is quite weak (92). Instead, public health research relies on its interdisciplinary tradition and may turn to neighbouring fields for theoretical approaches to improve its understanding of the link between social and health related inequalities. The relationship between social factors and the individual is



one of the key subjects in sociology. With a special interest in health, the research focus in medical sociology overlaps with the issue addressed in the question above. Looking into sociological explanations of health and illness, it immediately becomes clear that there are a number of theoretical paradigms that differ extensively with regard to their understanding of health inequalities. The most striking differences are perhaps found when comparing functionalist and conflict perspectives on health and illness (93). A functionalist perspective on health inequalities is characterised by a general stance on social stratification, which is considered to be an inevitable component of a functioning society. Social stratification reflects society's need for a strict and precise division of labour and health inequalities are a consequence of the different characteristics of these social groups. Disadvantaged groups get sicker because they lack the resources and abilities that are more common in the advantaged groups. Advocates of the conflict perspective understand health inequalities in a completely different way. They criticise functionalists for disregarding the dynamics between social groups and argue that social stratification emerges as a consequence of domination of the advantaged group and its suppression and exploitation of the disadvantaged. Health inequalities are a consequence of this dynamic: the privileged are doing well at the cost of the deprived. The social epidemiologist Nancy Krieger illustrates the contrast between these two perspectives by describing two commonly reproduced pictures of social inequalities (94). The functionalist perspective could be illustrated by a ladder on which members of the society could climb up and down. The rungs in the ladder are essential to the entire construction, and without them it would fall apart. If the individual climbs to the top of the ladder, they will enjoy a higher reward than the individual at the bottom. The conflict perspective on the other hand is illustrated by a pyramid with the oppressed masses carrying the weight of the ruling classes on their shoulders. The contrast could not be stronger; not only do functionalists and conflict theorists have different understandings of the mechanisms behind social stratification, but the two perspectives deliver completely different views on the legitimacy of inequality. Whereas functionalists regard social stratification as playing a vital role in society, conflict theorists consider it to be an obstacle for societal progress.

Social inequality may be regarded an inevitable or even necessary feature of society, but health inequalities rarely are. While most people can agree that health inequalities are a problem, the driving forces behind this problem are highly disputed. This also relates to another sociological key topic concerning the view on human agency, which touches upon a question addressed in the previous section: To what extent can an individual be held responsible for their own situation? This question is central for the studies of health inequalities and is considered in most theoretical approaches to the topic. In the famous *Black report* from 1980, the authors expanded on the 'cultural/behavioural' and

the 'materialist/structural' explanations of health inequalities. The report states that while the former types of explanations 'often focus on the individual as a unit of analysis emphasising unthinking, reckless or irresponsible behaviour or incautious lifestyle as the moving determinant of health status', materialist explanations rather emphasise 'the role of economic and associated socio-structural factors in distribution of health and well-being' (95). This equation of cultural and individual explanations on the one hand and materialist and structural explanations on the other hand has become quite established but has also been criticised (91). Following the *Black report*, countless contributions have discussed the interplay between structure and individual agency and its importance for health. It is a contested topic and the discussion shows that the relationship between society and individuals can be studied from a number of different perspectives. Nancy Krieger, who is one of the leading researchers within public health theory development, lists three theoretical approaches that she maintains have taken an increasingly important role in contemporary social epidemiology: 1) psychosocial approaches; 2) social production of disease/political economy of disease; and 3) ecosocial theory

The *psychosocial* approaches attend to biological responses to social interactions and have a strong focus on stress as a mediating mechanism between adverse experiences and disease. Krieger contrasts this to other theories, as she claims that the psychosocial perspective spends little attention on the sources of psychosocial adversities and buffers, and the way these adversities and buffers can be shaped by social policy. The *social production of disease* approach overlaps with the sociological conflict perspectives on social inequality and health as well as the materialist explanations discussed in the *Black report*. It attends to health determinants on a macro-level by investigating the health impact of economic systems, structural discrimination and political developments. Krieger views this approach as a critical reaction to a public health discourse focusing on individual choice and healthy lifestyles. She welcomes the contribution of this approach to a broader understanding of health determinants, yet regrets the absence of explanations of what exactly these determinants are determining. In other words, the biology behind health and disease is left out of the discussion. This is something that easily happens in a multidisciplinary research field, as essential dimensions are completely left out due to lack of interest or expertise. However, Krieger has the ambition to integrate several fields into an approach that she calls *ecosocial theory*. The ecosocial theory focuses on the concept of *embodiment*, which is described as the process by which humans biologically incorporate external factors, like the physical and social environment, over the life course (96). The term embodiment has a tradition in anthropological and sociological research and has been discussed at length in several contributions by Nancy Krieger (97-100). In one of them, Krieger emphasises

five pathways by which individuals may embody their physical and social environment in a way that will contribute to the formation of health inequalities (97):

- 1) Economic and social deprivation, including inadequate food and housing
- 2) Toxic substances and hazardous conditions leading to poisoning and accidents
- 3) Social trauma, including discrimination, violence and psychosocial stressors
- 4) Targeted marketing of health hazardous commodities, such as tobacco and alcohol
- 5) Inadequate medical care

These potential pathways will have different significance depending on which forms of inequality, which social categories and which diseases are considered. Some of the social categories that divide people into groups of different class, race/ethnicity, gender or sexuality will be more or less closely related to specific pathways. For example, one of the main drivers behind the worse health of lesbian, gay, bisexual and transgender (LGBT) people could be found in the third pathway. Discrimination, violence and the psychosocial stress connected to the minority status leads to higher rates of mental health problems, substance misuse and suicide attempts in LGBT people compared to the majority population (101, 102). For other categories, multiple pathways are plausible. Research on racial health inequalities in the United States has introduced the concept of *weathering*, which posits that not only do Black people suffer from worse health than White people in general, but that their health also deteriorates earlier in life. Weathering is commonly used as a way to describe how rocks break down through prolonged contact with wind and water. In this health analogy, the wind and the water are the cumulative effect of repeated experience of socioeconomic disadvantage, racism, and marginalisation. It is possible to see how all the pathways described by Krieger may lead to weathering due to the correlation between race and social class, but this is not the only explanation. One study investigated racial disparities in *allostatic load* as a biomarker of physiological burden due to stress (103). The authors showed that even when comparing poor Whites with non-poor Blacks, the allostatic load was higher in the latter group, indicating that the third pathway, which includes discrimination and marginalisation, is of vital importance for health. Another factor that will determine the relative importance of the different pathways is the disease in question. There are some evident links between particular environmental factors and different groups of diseases. For example, hazardous work places may lead to physical handicaps following accidents. The health effect of social trauma may be more likely to take the form of mental health problems and self-harm, whereas exposure to targeted marketing may lead to consumption related diseases such as alcohol misuse, smoking related diseases and obesity. Social and economic deprivation, as described in the first pathway, is likely

to have a large number of adverse health consequences, whereas inadequate medical care will worsen the effect of disease once it has already occurred.

#### **4.4 Exposure and vulnerability**

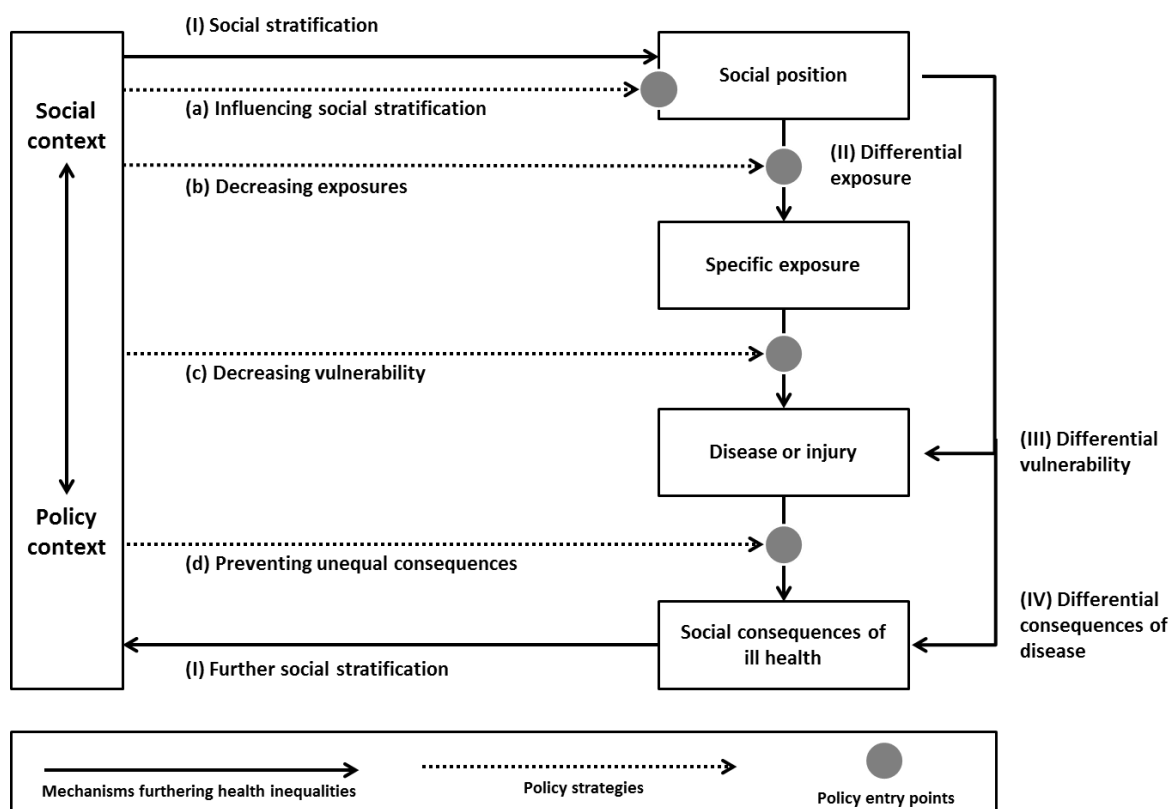
Although not explicitly framed as a process of embodiment, the public health literature on the distinction between *exposure* and *vulnerability* touches upon very similar topics. Krieger also addresses ‘exposure, susceptibility and resistance’ as a key aspect of her theoretical approach, but the discussion around exposure and vulnerability is perhaps even more closely connected to the work of Finn Diderichsen and Johan Hallqvist and their development of a ‘framework for elucidating the pathways from the social context to health outcomes’ (104, 105). An adapted version of the framework is shown in Figure 2 and it suggests a cycle of mechanisms that explain how social stratification may lead to health inequalities, which again may lead to further social stratification. The framework also suggests policy entry points for strategies targeting social and health related inequalities. The authors state that the individual social position of a person is a reflection of their relationship to the social context in which they live. Exposure and vulnerability are the two mechanisms that link the social position to health, and interpersonal differences with regard to these mechanisms create health inequalities. Adverse exposures are different kinds of disease agents; for example biomedical pathogens like viruses, but also unhealthy consumption goods, such as alcohol and tobacco, as well as environmental exposures like lead paint and air pollution. The exposures may vary between social groups, not only with regard to their type, but also in terms of amount and duration.

Although an exposure may be equally distributed between people with different social position, the health impact of that exposure may be more severe for disadvantaged groups. This could be explained by differential vulnerability to the adverse exposures. The vulnerability may be increased in certain age groups with weaker biological defences (children and elderly) or as a consequence of a combination of exposures (e.g. smoking and air pollution may make an individual more vulnerable to viral respiratory infections). The concept can also be extended to the social arena; a person who grew up in poverty with inadequate nutrition and housing, poor education and adverse experiences may be much more vulnerable to a potentially health damaging exposure later in life compared to an individual, who thanks to a privileged upbringing, has been able to create a kind of buffer against the effect of adverse exposures.

The social consequences following a disease are the final step on the individual trajectory of disease development. For people with an adequate safety net, it is unlikely

that the disease will have any longstanding social or economic consequences. For others, the disease may lead to missing income, unemployment, social drift and isolation. The differences in the social consequences of disease lead to widening social inequality and close the circle between individual disease development and the social context.

**Figure 2: A framework for elucidating the pathways from the social context to health outcomes and for introducing policy interventions**



Diderichsen and Hallqvist 1998

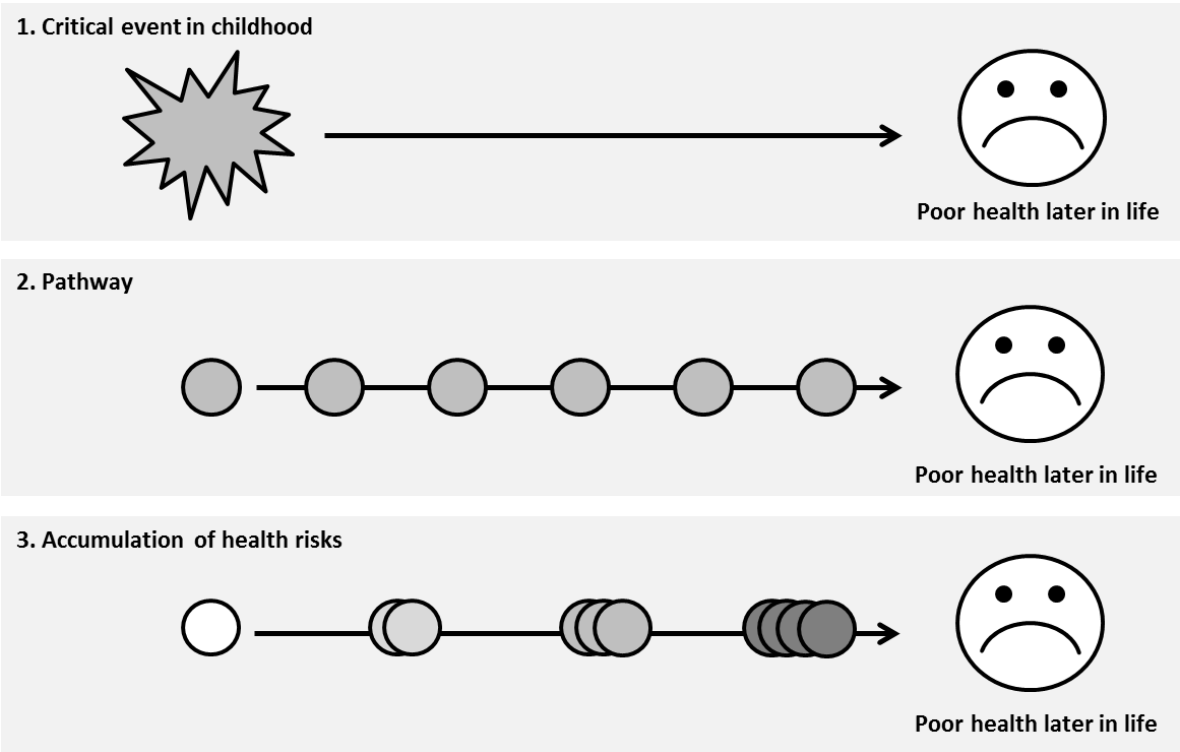
#### 4.5 A life course perspective

The aim of this thesis is to understand how childhood social inequality translates to alcohol related health disparities later in life. In order to be able to take the important factor of time into account, the investigative approach to this question is also guided by a life course perspective. This is today a well-established approach in longitudinal epidemiology that proceeds from the assumption that adult health is affected by a wide range of biological and social factors happening throughout an individual's lifetime. The idea that these factors affect adult health 'independently, cumulatively and interactively' has been the starting point for the development of testable life course models

describing the potential trajectory between life events and adult health (106). The critical event in childhood or the critical period model refers to the direct effect that a certain exposure in a specific time window will have on health later in life. The pathway model describes how one adverse event may lead to another, which may lead to a third that will have a negative effect on adult health. The accumulation model suggests a similar chain of events effect and adds the idea that the accumulated effect of these events will be larger than the sum of the individual factor effects (106-108). The three life course models are illustrated in Figure 3.

The life course perspective provides a framework for understanding how social inequality in childhood may connect to alcohol related health disparities in adulthood. Although the models are not explicitly tested in the articles, they deliver a good platform for the discussion surrounding plausible mechanisms and how these mechanisms operate ‘independently, cumulatively and interactively’.

**Figure 3: Life course models**



This section has discussed the capability approach by Amartya Sen and the intersectionality approach in order to make sense of and understand social inequality. Furthermore it has addressed a number of theoretical perspectives from sociology and public health research on the process linking social inequalities to health disparities. Finally it has discussed the Diderichsen model and the life course approach as two ways to understand the mechanisms by which the connection between social factors and health occurs and persist over a person's lifetime.





# 5

## Materials and methods

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This section provides a description of study design, data sources and the measures used in the empirical studies of the thesis. It also includes information regarding the statistical analyses in the papers as well as the ethical considerations of the research project.

### 5.1 Study design and data sources

The empirical part of this thesis consists of four register-based national cohort studies. Epidemiological research from the Nordic countries has been able to distinguish itself internationally thanks to its access to national registers. Not only do the Nordic registers provide rich data for entire populations, but researchers can also make use of the personal identification numbers (PIN) given to each resident at time of birth or immigration to link records with each other and track an individual in multiple registers (109, 110). In Sweden, the multi-generation register also enables record linkage between individuals and their parents, siblings and offspring, which has proven valuable in longitudinal and intergenerational studies (111). The registers used in these studies are administered by Statistics Sweden, the National Board for Health and Welfare, the Swedish Police Authority and the Swedish National Agency for Education. All registers used in the studies are listed in Table 1.

From 1973, all pregnancies leading to child deliveries are included in the Medical Birth Register, which makes this year the starting point for many Swedish epidemiological studies on national birth cohorts, including the papers published in this thesis. In three of the studies, we examine a birth cohort born between 1973 and 1984 ( $n = 948\,518$ ) and follow them to 2009. In the third study, we have a slightly smaller cohort including all men and women born between 1973 and 1982 ( $n = 872\,912$ ), and we follow them to 2013. An overview over the studies and their populations is given in Table 2.

**Table 1: National registers**

Variables	National Register	Years	Studies
Date of birth Sex	The Medical Birth Register	1973-1982/84 <sup>1</sup>	all
Residency in Sweden	Register of the Total Population	1988-1999/2000 <sup>2</sup>	all
Parental personal identification number	Multi-generation register	1973-1982/84 <sup>1</sup>	all
Maternal country of birth	Register of the Total Population	1973-1984	I, II
Area of residence	National Housing and Population Censuses	1973-1984	I, II
Parental socioeconomic position	National Housing and Population Censuses	1985/1990 <sup>3</sup>	all
Parental alcohol/drug misuse	National Patient Register Cause of Death Register	1973-1999/2001 <sup>4</sup>	all
Parental mental health problems	National Patient Register Cause of Death Register	1973-1999/2001 <sup>4</sup>	all
Parental criminality	National Register of Criminal Convictions	1973-1999/2001 <sup>4</sup>	all
Child welfare intervention	Swedish Register of Children and Young Persons Subjected to Child Welfare Measures	1973-1999 <sup>4</sup>	III
Single parent household / divorce	Longitudinal Integration Database for Health Insurance and Labour Market Studies (LISA)	1990-1999/2001 <sup>5</sup>	I, II, III
Parental death	Cause of Death Register	1973-1999 <sup>4</sup>	III
Household receiving social assistance	Longitudinal Integration Database for Health Insurance and Labour Market Studies (LISA)	1990-1999 <sup>5</sup>	III
School marks	Register of School Marks	1988-2000 <sup>6</sup>	II, IV
Alcohol related inpatient care	National Patient Register	1991-2009/2013 <sup>7</sup>	all
Alcohol related outpatient care	National Patient Register	2002-2009/2013	all
Alcohol related death	Cause of Death Register	1991-2009/2013 <sup>7</sup>	I, II, III
Acute alcohol intoxications	National Patient Register	1991-2009 <sup>7</sup> / 2002-2009	IV
Alcohol related criminality	National Register of Criminal Convictions	1989-2009 <sup>8</sup>	IV

<sup>1</sup> In study I, II and IV, the population is born 1973-84. In study III, the population is born 1973-82.

<sup>2</sup> At age 15/18 of child

<sup>3</sup> Census of 1985 was used older half of the population, census of 1990 was used for the younger

<sup>4</sup> Age 0-17 of child

<sup>5</sup> Age 17 of child

<sup>6</sup> At age 15-16 of child (end of compulsory school)

<sup>7</sup> Alcohol related hospitalisation from 15 years of age

<sup>8</sup> Alcohol related criminality (DUI) from 16 years of age

**Table 2: Study overview**

	Study I	Study II	Study III	Study IV
Birth cohort	1973-84	1973-84	1973-82	1973-84
Population description	All men and women born in Sweden and registered as residents at 15 years of age. Excluding the group with missing SEP	All men and women born in Sweden and registered as residents at 15 years of age. Excluding the group with missing parental SEP and the group with alcohol related disorders before age 16	All men and women born in Sweden and registered as residents at 18 years of age. Excluding the group with missing SEP	All men and women born in Sweden and registered as residents at 15 years of age. Excluding the group with missing SEP
Population size	948 518	948 440	872 912	948 518
Outcome	Alcohol related hospital care and death	Alcohol related hospital care and death	Alcohol related hospital care and death	Alcohol related hospital care, acute alcohol intoxication, alcohol related criminality (DUI)
Number of cases	11 056	10 978	13 697	43 877
Statistical model	Cox proportional hazard model	Cox proportional hazard model	Logistic regression	Cox proportional hazard model
Follow-up time	Age 15 of cohort member until event, death/emigration or end of follow-up in 2008/09	Age 15-16 of cohort member until event, death/emigration or end of follow-up in 2008/09	Age 15 of cohort member until 2013	Age 15-16 of cohort member until event, death/emigration or end of follow-up in 2008/09

## 5.2 Measures

The first three studies focus on different dimensions of childhood social inequality and its relationship to alcohol related health problems in young adulthood. In the fourth study, we examine the interaction between childhood social disadvantage and gender and we use a more differentiated outcome measure including alcohol related disorders, acute intoxication and alcohol related criminality.

### 5.2.1 Explanatory variables

In the first study, we focus on parental socioeconomic position (SEP) as indicated by the national housing and population censuses conducted in 1985 and 1990. Parental SEP is also used as a main explanatory variable in Study IV and as a co-variable in Studies II and III. The socioeconomic classification system (SEI) behind the variable was developed by Statistics Sweden and is an occupation-based measure considering a number of factors. The typical trade union affiliation and the educational level required for a certain occupation are taken into account in order to distinguish between manual and non-manual workers. The position at the work place (employer, employee with and without subordinates) brings a status dimension to the measure. In our studies, we have used an aggregated SEP classification including three non-manual and two manual groups. In addition, a very heterogeneous group of farmers, students, homemakers, unemployed and self-employed individuals was listed as a sixth SEP category. Childhood SEP was determined by the highest SEP of any adult in the household. In all four studies, the individuals with missing information on parental SEP were excluded from further analysis.

The second study focuses on the school performance at end of compulsory school (age 15-16 of cohort members). The school marks received at end of grade nine summarises the performance in a number of subjects and are also used as qualification to upper secondary school programmes (gymnasium). Using the mean and standard deviations (SD) of national school marks, we have divided the population into five groups: high school marks ( $> \text{mean} + 1\text{SD}$ ), high average (between mean and mean + 1SD), low average (between mean and mean - 1SD), low ( $< \text{mean} - 1\text{SD}$ ) and missing school marks. We also use a more absolute measure of school performance by differentiating between the groups eligible and ineligible for upper secondary school. To be eligible for upper secondary school, a student must pass the so called core subjects (Swedish, English and mathematics) as well as a number of additional subjects, a number that depends on the type of secondary educational programme (112).

In the third study focusing on family environment, we collect variables from a number of registers to find indicators of childhood household dysfunction (CHD). We use data on parental psychosocial problems (i.e. parental alcohol and/or drug misuse, parental mental health problems and parental criminality), child welfare intervention (out-of-home or respite care), social assistance payments, single parent household/parental divorce and parental death to create a CHD index. The study population was divided into four groups: those having no experience of CHD, those with experience of one indicator of CHD, those with experience of two indicators of CHD and those with experience of three or more. Parental psychosocial problems were also included in the

other studies as co-variables. The existence of a single parent household was used as a co-variable in Study I and II.

Finally, in the fourth study we study parental SEP, school performance, parental psychosocial problems and their interaction with gender of the cohort member. A summary of the explanatory variables can be found in Table 3.

**Table 3: Variables indicating childhood inequality**

Dimension of inequality	Groups
Socioeconomic position	<ul style="list-style-type: none"> <li>• High non-manual</li> <li>• Mid non-manual</li> <li>• Low non-manual</li> <li>• Skilled manual</li> <li>• Unskilled manual</li> <li>• Other</li> </ul>
School performance	<ul style="list-style-type: none"> <li>• High school marks (<math>&gt; \text{mean} + 1 \text{ SD}</math>)</li> <li>• High-average school marks (between mean and mean + 1 SD)</li> <li>• Low-average school marks (between mean and mean - 1 SD)</li> <li>• Low school marks (<math>&lt; \text{mean} - 1 \text{ SD}</math>)</li> <li>• Missing school marks</li> <li>• Eligible for further secondary school</li> <li>• Ineligible for further secondary school</li> </ul>
Family environment	<ul style="list-style-type: none"> <li>• No experience of CHD</li> <li>• Experience of one CHD indicator</li> <li>• Experience of two CHD indicators</li> <li>• Experience of three or more CHD indicators</li> </ul>
Gender	<ul style="list-style-type: none"> <li>• Female</li> <li>• Male</li> </ul>

### 5.2.2 Outcomes

The main outcome in our studies was alcohol related disorders as indicated by alcohol related inpatient care and outpatient care, as well as alcohol related mortality. In order to determine whether the medical care or the death was alcohol related, we used the International Classification of Disease (ICD) codes in the patient register or cause of death register. The following diagnoses with corresponding ICD-10 codes were used:

- Mental and behavioural disorders due to use of alcohol (F10)
- Alcoholic fatty liver (K70)
- Alcoholic polyneuropathy (G621)
- Alcoholic cardiomyopathy (I426)
- Alcoholic gastritis (K292)

For cases before 1997, the equivalent diagnoses in ICD-9 were used.

The medical diagnoses that did not necessarily imply long-term alcohol misuse, i.e. acute intoxication or drunkenness without dependence (ICD-10: F10.129), were excluded from the disorder measure, but listed as a separate outcome variable in Study IV. In this study we also included a measure of alcohol related criminality, i.e. driving under influence of alcohol (DUI), that was collected from the National Register of Criminal Convictions.

### **5.2.3 Co-variables**

Apart from the explanatory variables that were used as co-variables in the other studies, we also included some demographic co-variables in the first two studies. The population was divided into four groups according to maternal country of birth: mother born in Sweden, the other Nordic countries, the other European countries and outside Europe. The area of residence was divided into three categories: city, town and rural.

## **5.3 Statistical analysis**

A major dilemma in epidemiological studies is the lack of possibilities to analyse counterfactuals and thus prove causality. The counterfactual approach was developed in philosophy and statistics and implies a practical impossibility: in order to prove causality we need information on two exposure distributions in one population during one etiologic time period (113). A counterfactual exposure is per definition unobservable; if we want to know the effect of exposure to a certain risk factor on a disease (e.g. smoking on lung cancer) in one individual during a specific time, we cannot observe what did not happen. If the individual smoked during the time period and got lung cancer, we cannot say what would have happened to the same individual, had they not smoked during this time. The same logic applies to the explanatory variables studied in this thesis. We cannot say if an individual with a specific socioeconomic background and a specific school performance in a specific family environment and with a specific gender would be more or less likely to develop alcohol related problems had any of these variables been different for this particular individual. Instead, we have to study the same individual during different time periods or, as is the case in our

studies, we use the same time period, but we compare different individuals and populations.

The problem with this approach is that we cannot be certain that the differences in outcome are caused by differences with regard to the explanatory variable or by differences with regard to some other confounding variable. A confounder is generally defined as a variable that is associated with both the explanatory variable (exposure) and the outcome, but without being an effect of the exposure (114). This distinguishes the confounder from the mediator that is a variable on the causal pathway between an exposure and the outcome. In extreme cases of confounding, the association between two variables may be completely spurious, i.e. entirely explained by the confounder. Accordingly, in strong cases of mediation, the direct association between two variables may be negligible, but rather there is a clear indirect relationship via the mediator. For example, while there is an association between possession of a cigarette lighter and lung cancer, this relationship is entirely explained by the confounder smoking. As for mediation, there is actually no direct link between the act of smoking and lung cancer, but this relationship is mediated by the uptake of carcinogens in the body. Researchers in epidemiology have developed a range of different methods to compensate for the impossibility of a counterfactual analysis. One standard procedure to control for the effect of potential confounders is to include these variables in multivariable regression analyses (114). Potential mediators can be handled in a similar way, but instead of saying that the effect of the third variable is controlled for, we may say that we have found a mechanism that to a certain degree explains the indirect relationship between exposure and outcome. The inclusion of potential confounders and mediators in a regression model should be driven by previous research and theory. If it does not make sense to include the variables, we should not routinely do so, just because we can. In Study I and II, we adjusted the regression analysis for maternal country of birth and area of residency, but after determining that these variables did not affect the relationships between the variables of interest, they were not included as co-variables in Study III and IV.

The studies made use of Cox proportional hazard models (Study I, II and IV) and logistic regression models (Study III) to estimate hazard ratios (HR) and odds ratios (OR) indicating the strength of the association between childhood disadvantage and the alcohol outcomes. The Cox and the logistic regression models are in no way interchangeable, but in the case of short follow-up time and rare outcomes (< 10 %), the HRs and ORs approximate each other (115, 116). Also, the interpretation of the effect strength is similar: a HR/OR of 1 meaning no difference between the compared groups, a HR/OR exceeding 1 meaning a higher risk in the exposed group and a HR/OR below 1

meaning a lower risk (117). However, these similarities should not distract from the fact that Cox and logistic regression are statistically two very different techniques. Instead of assessing the proportion of an outcome as the logistic regression model does, the Cox regression models the incidence (number of new cases per population at risk per unit time). Based on the incidence, the Cox model assesses the hazard function, which is the probability that an individual will experience the outcome in the next instant, given that they have not experienced it until then. In contrast, a logistic regression model gives the proportion or the cumulative incidence of new cases in a given time period (118). The Cox model may be considered superior to the logistic regression model because it takes the factor of time, and thus much more information, into account. By considering time, the Cox model allows for *wash-out periods*, a technique that can be used to control for reversed causality between outcome and explanatory variables. In Study II we analyse the relationship between school performance and alcohol related disorders. It is plausible that adolescent drinking and an early diagnosis of alcohol related disorders could have had an adverse effect on the school performance of the individual. By including wash-out periods in which all cases of alcohol related disorders occurring five or ten years after the end of compulsory school are disregarded, the chance of reversed causality is minimised.

All studies in this thesis also discuss the extent to which the relationship between childhood social disadvantage and alcohol related problems in young adulthood is different for different population groups. This issue is usually addressed in analyses of interaction and effect modification. Although these concepts are often used interchangeably to describe the potential impact of a third variable on the relationship between exposure and outcome, the epidemiological literature makes a distinction between the two terms (119, 120). Effect modification (sometimes effect-measure modification or statistical interaction) is present when the effect of an exposure on the outcome varies across different strata of a third variable. In the case of interaction (sometimes biological interaction), the third variable is rather seen as a co-exposure, which in combination with the main exposure has an effect that differs from the sum of the two separate effects. In other words, biological interaction is present when the combined effect of two exposures deviates from additivity. Whether a variable is regarded to contribute to effect modification or to interaction (or to both) is a question that will have an impact on the way the results are presented (121, 122).

In the first two studies, the effect modification related to gender (Study I) and gender and parental SEP (Study II) were indicated using the p-value related to the product term of the co-variable and parental SEP (Study I) or school performance (Study II). In Study III and IV, we have included more elaborate interaction analyses indicating the additive



interaction effect resulting from the combination of two variables: CHD and parental SEP in Study III, gender and parental SEP in Study IV.

#### **5.4 Ethical considerations**

The default advice for medical and public health studies that include human subjects is that the study participants must give their informed consent. For practical reasons, this is difficult to fulfil in large epidemiological studies of national birth cohorts. As a substitute for informed consent, Swedish research may be approved by regional ethics boards including researchers and public representatives. In order to be approved by the ethic board, the personal integrity of the study participants must be guaranteed. The most central component of this protection is the fact that all PINs used for individual identification are replaced by an anonymous serial number before handed to the researcher. This makes it impossible for the researcher to trace any specific individual in the material. The work in this thesis was granted by the Stockholm regional ethics board (registration number: 2009/2027-31/5, 2012/657-32, 2013/1058).



# 6

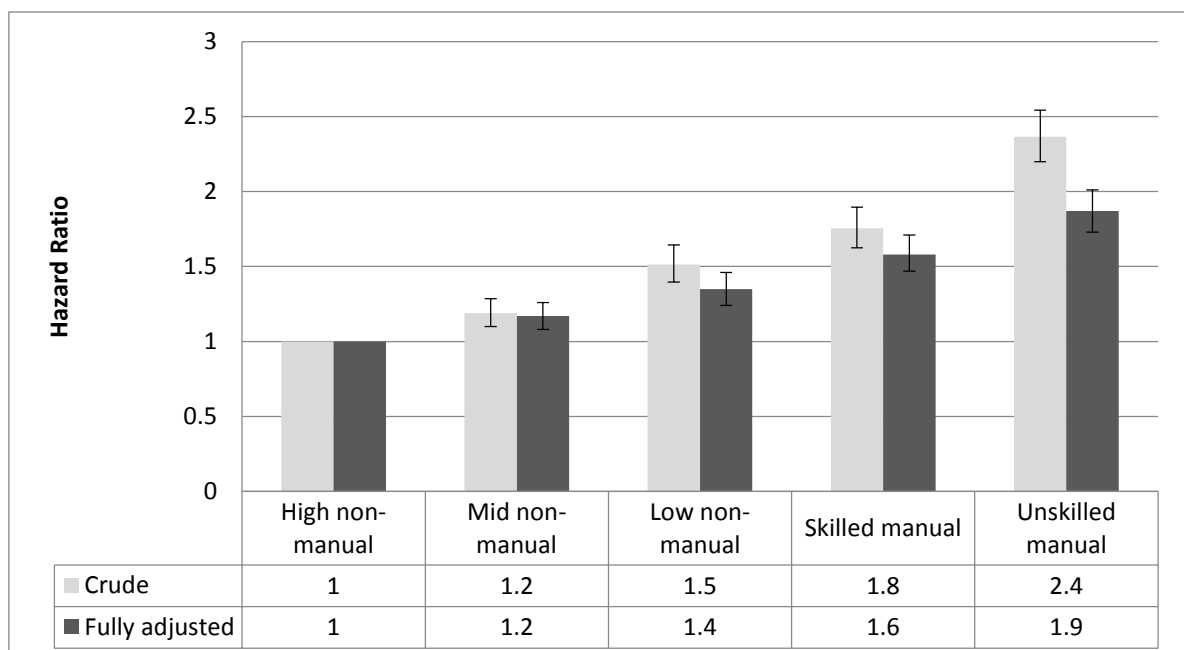
## Results

### 6.1 Main effects

*How is childhood socioeconomic position associated with alcohol related disorders in young adulthood?*

Study I found a clear socioeconomic gradient with regard to the risk of developing alcohol related disorders in young adulthood in the Swedish national cohort. The population growing up with parents in unskilled manual occupations was more than twice as likely to receive medical care or die due to alcohol related disorders compared with the group with the highest socioeconomic background. The gradient was somewhat attenuated after adjusting for area of residency, maternal country of birth, single parent household and parental psychosocial problems, but the increased risk associated with low SEP remained (see Figure 4).

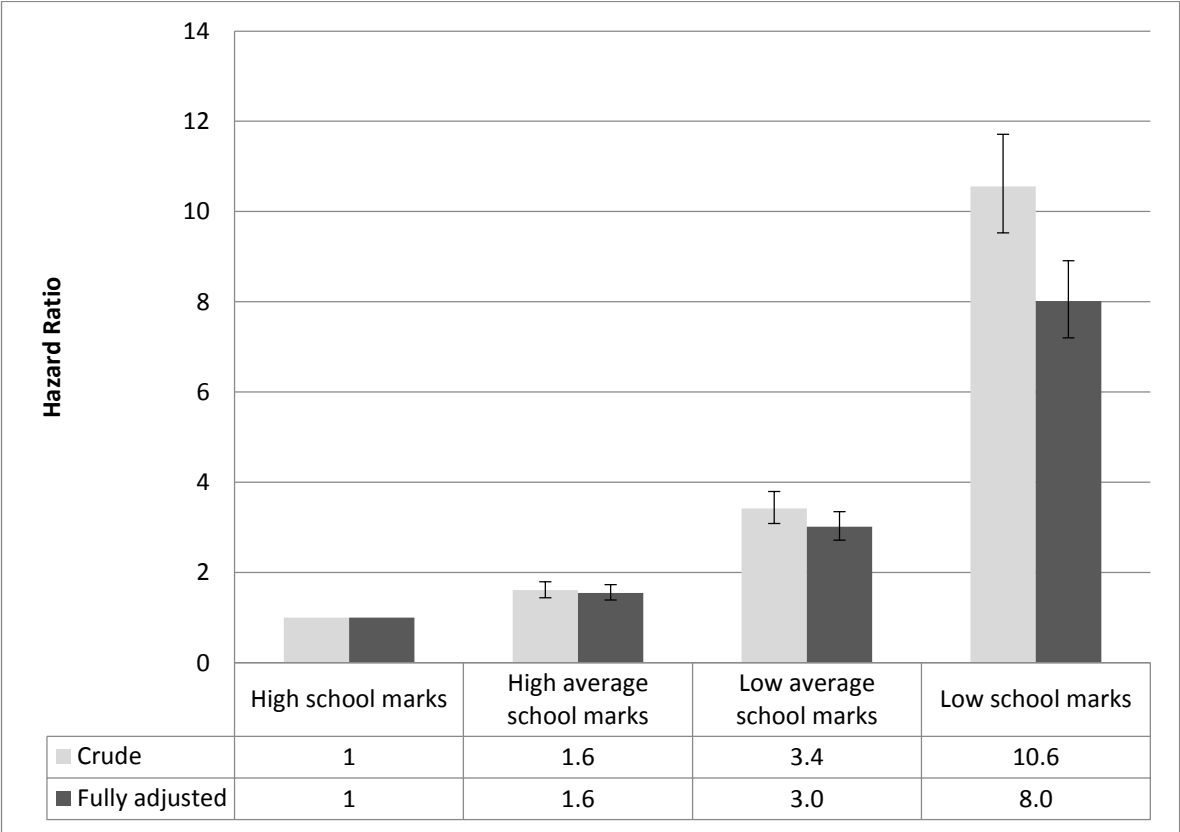
**Figure 4: Hazard ratios (95% CI) for alcohol related disorders by parental SEP**



*How is school performance at the end of compulsory school associated with alcohol related disorders in young adulthood?*

Study II found that school marks at the end of compulsory school are strongly related to alcohol related disorders in young adulthood. We used the population with high school marks as the reference category and compared them to three other groups. Those with high-average school marks had a slightly increased risk whereas the population with low-average school marks had a quite substantial risk increase. The population with low school marks stands out in that they were more than ten times more likely to develop alcohol related disorders in young adulthood compared to the reference category. Adjusting for childhood SEP, area of residency, maternal country of birth, single parenthood and parental psychosocial problems, did not lead to any great alteration of the hazard ratios in the two groups with average school marks. The effect was more pronounced in the population with low school marks; however, its increased risk remained on a very high level (see Figure 5.) Also, we found a strongly increased risk for the outcome in the population that were ineligible for further secondary school (HR: 4.7, 95% CI: 4.5-4.9, not shown in graph).

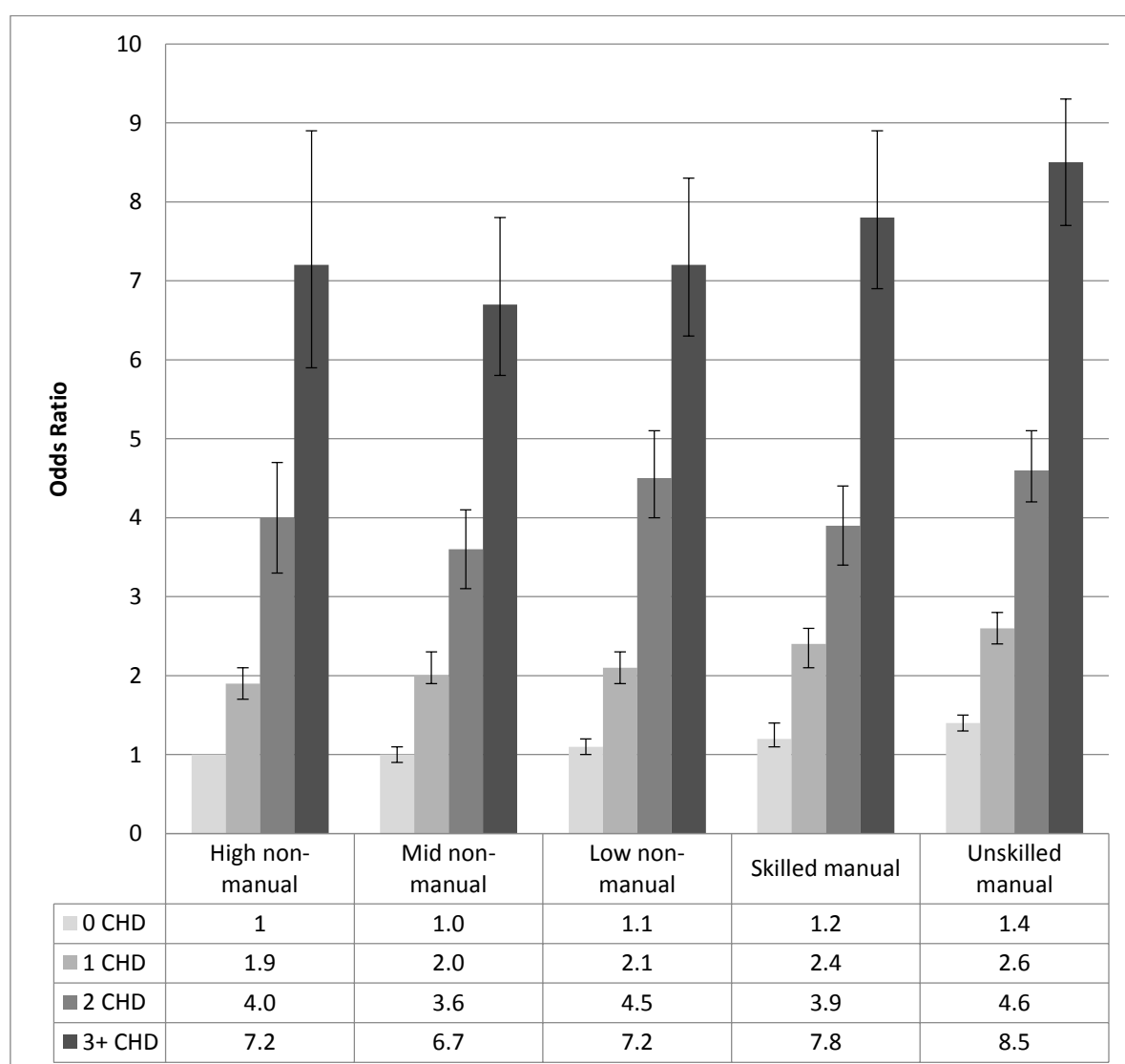
**Figure 5: Hazard ratios (95% CI) for alcohol related disorders by school performance**



# *How is childhood household dysfunction associated with alcohol related disorders in young adulthood?*

Study III showed that experience of CHD was strongly and cumulatively associated with alcohol related disorders in young adulthood. The association was similar within each socioeconomic group. Compared to the reference group (high non-manual SEP and no experiences of CHD), the populations with one experience of CHD had an approximately doubled risk of alcohol related disorders later in life. In the groups with experiences of two CHD indicators, this risk was about four times higher, whereas the populations with experience of three CHD indicators or more were seven to eight times more likely to develop alcohol related disorders (see Figure 6).

**Figure 6: Odds ratios (95% CI) for alcohol related disorders by experience of childhood household dysfunction**

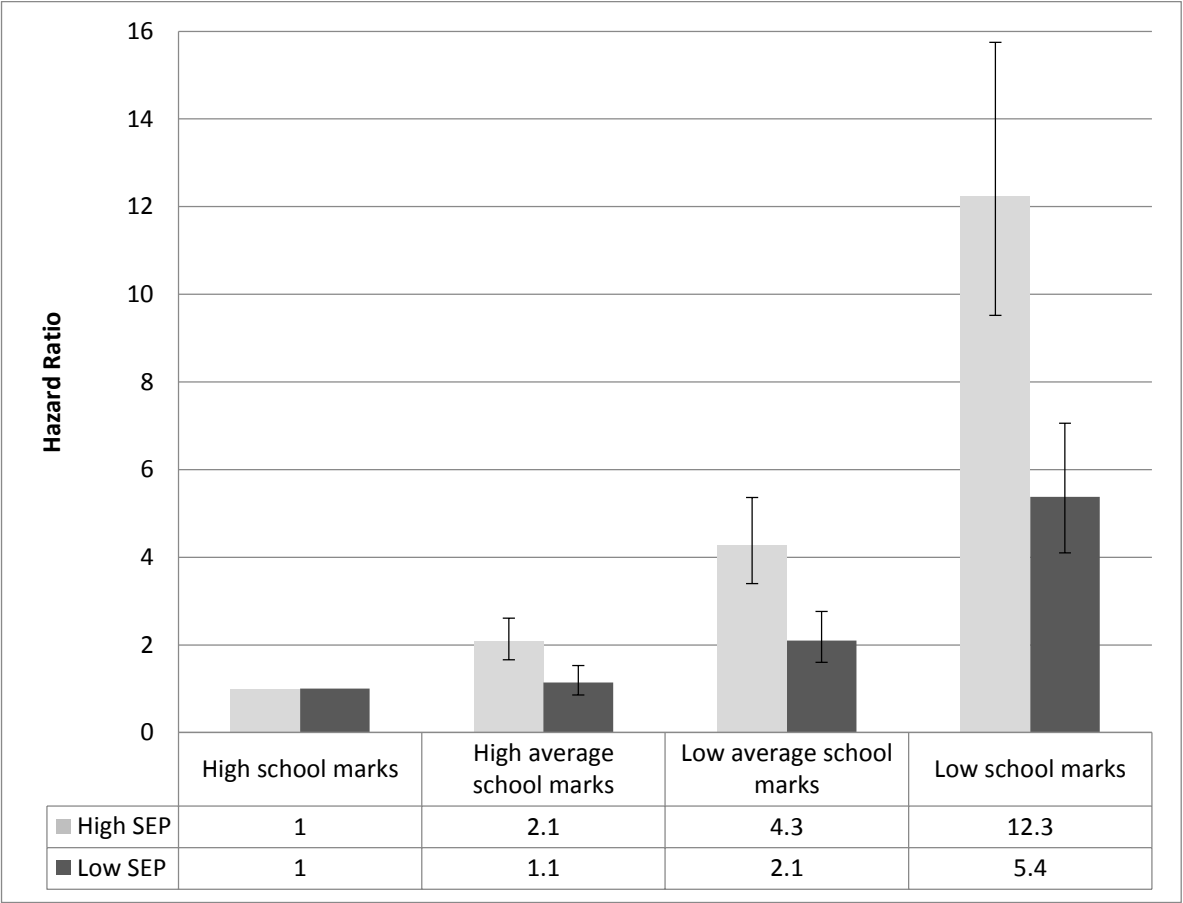


6.2 Mediation and effect modification

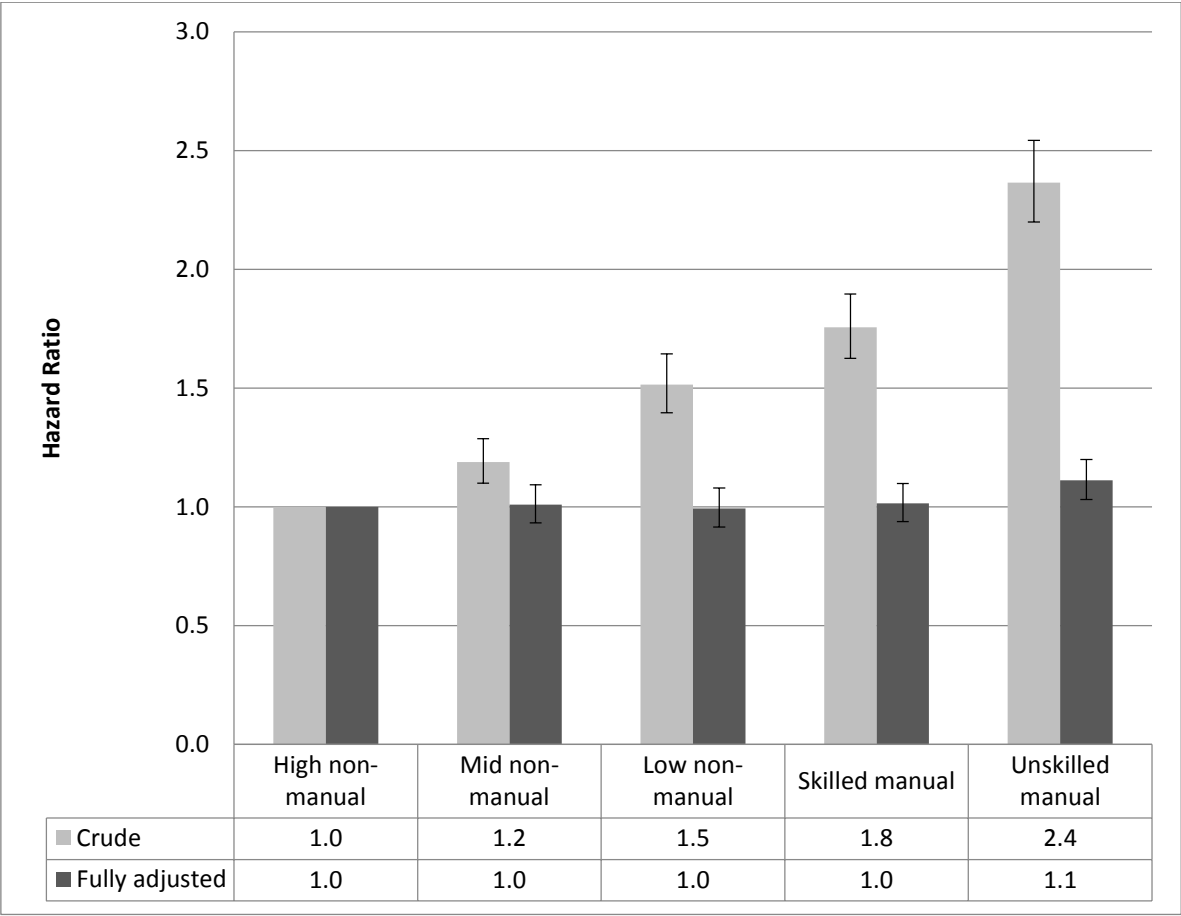
*To what extent does the relationship between school performance and alcohol related disorders in young adulthood depend on the socioeconomic background of the study subject?*

In relative terms, the adverse effect of low school performance was stronger in the population from high non-manual households compared to the population growing up with parents in unskilled manual occupations (Study II). The population with high school performance was used as a reference group in their specific SEP category. The group with low school performance from high socioeconomic background was twelve times more likely to develop alcohol related disorders compared to their reference group, whereas low school performance in low SEP groups implied a five-fold risk compared to the high performing students from similar socioeconomic environment (see Figure 7). Study II also showed that the socioeconomic gradient found in Study I was completely attenuated once school performance was taken into account (see Figure 8).

**Figure 7: SEP stratified hazard ratios (95% CI) for alcohol related disorders by school performance**



**Figure 8: Hazard ratios (95% CI) for alcohol related disorders by parental SEP adjusted for school performance**



*To what extent does the relationship between childhood household dysfunction and alcohol related disorders in young adulthood depend on the socioeconomic background of the study subject?*

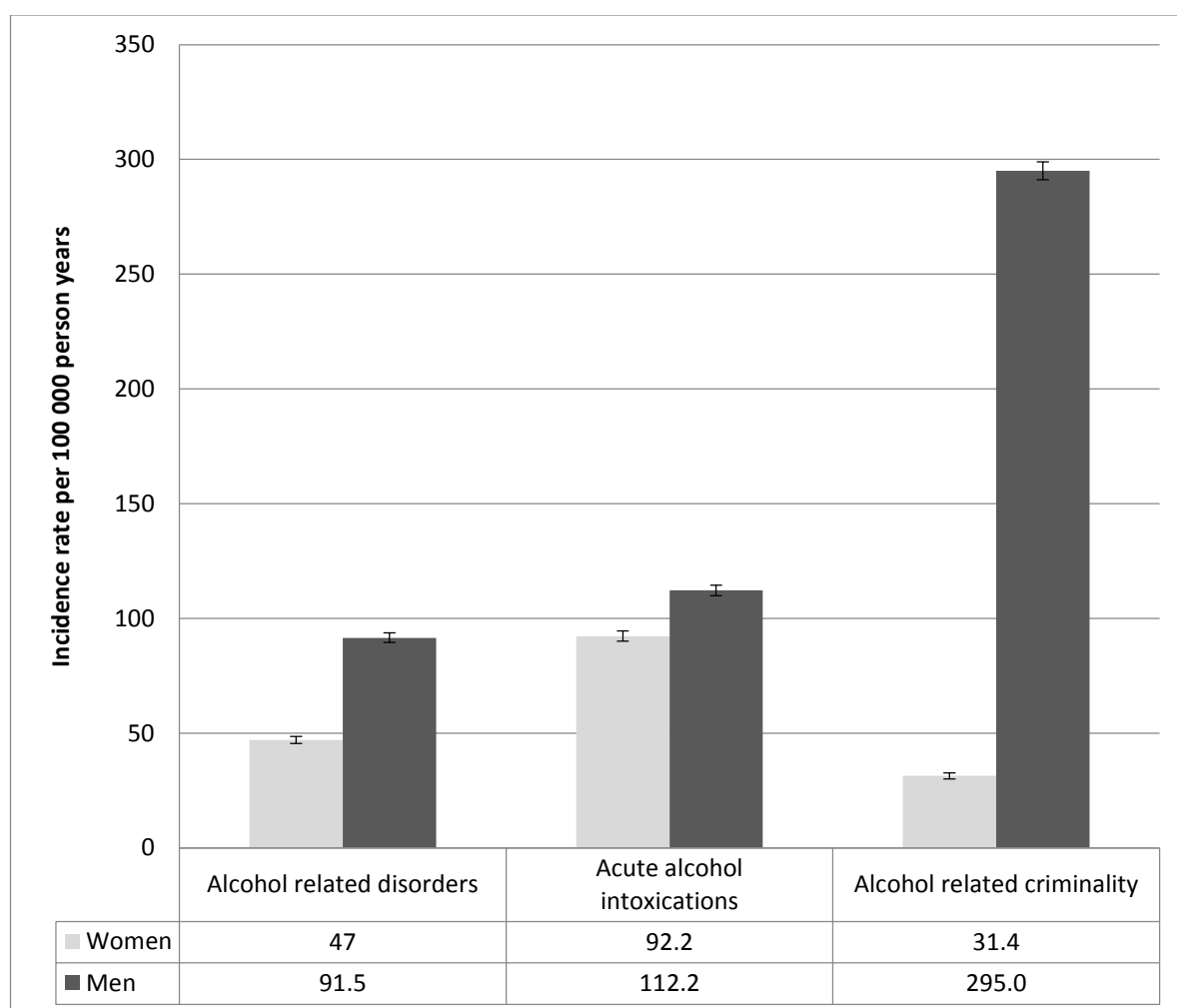
As suggested by Figure 6, the effect of CHD on alcohol related disorders in young adulthood was similar in each socioeconomic group. In other words, socioeconomic background did not modify the relationship between CHD and the outcome.

### 6.3 Social inequality and gender

*What is the incidence of alcohol related disorders, acute alcohol intoxications and alcohol related criminality in Swedish men and women?*

Study IV used a more differentiated measure of alcohol related problems separating cases of alcohol related disorders, intoxications and criminality. All alcohol related problems were more common in the male population, the incidence rate ratios (IRR) were however highly dependent on the indicator. Acute intoxication was almost equally common in men and women (IRR 1.2, 95% CI: 1.2-1.3), whereas alcohol related disorders were twice as common among men (IRR 1.9, 95% CI: 1.9-2.0). However, this gender gap was still relatively small compared to the difference with regard to alcohol related criminality (IRR 9.4, 95% CI: 9.0-9.8). The incidence rates are shown in figure 9.

**Figure 9: Incidence rate (95% CI) per 100 000 person years for alcohol related problems in men and women**



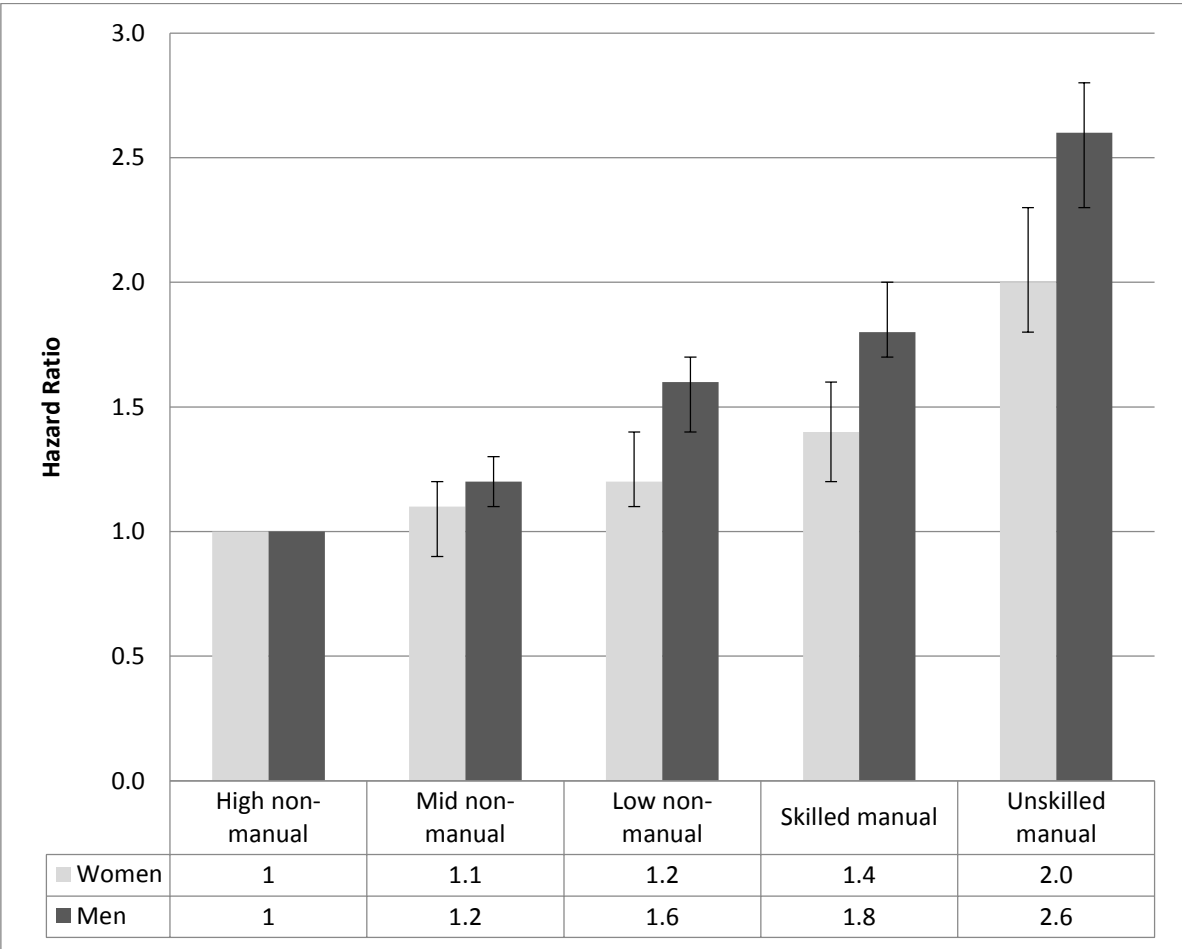


*How is childhood socioeconomic position associated with alcohol related problems in men and women respectively and to what extent is this association explained by school performance and parental psychosocial problems?*

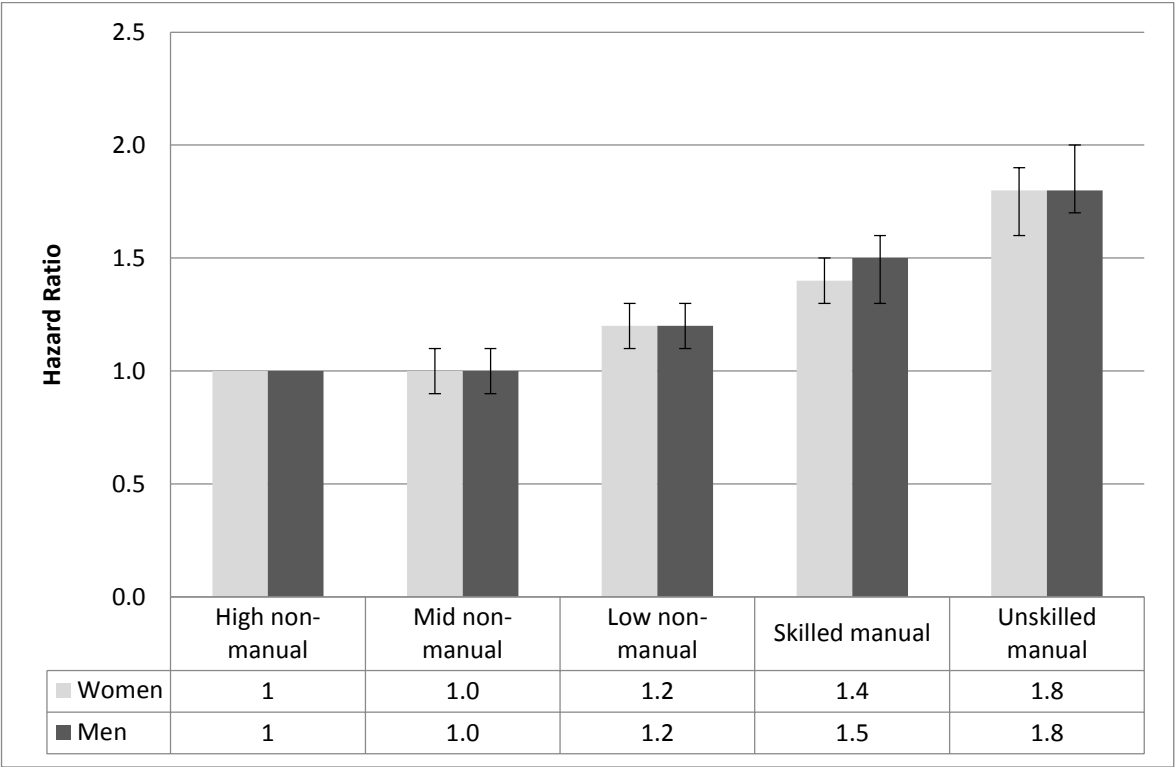
In both men and women, there was a socioeconomic gradient with regard to all three alcohol outcomes. The strongest gradient was found with regard to alcohol related criminality, followed by alcohol related disorders and acute intoxications. The relationship between socioeconomic background and the outcomes was quite similar in men and women (see Figure 10-12 for unadjusted hazard ratios).

Adjusting for psychosocial problems and school performance led to a substantial attenuation of the socioeconomic gradient. For all outcomes, the remaining socioeconomic differences were negligible in the fully adjusted models. For women, the socioeconomic gradient in alcohol related disorders disappeared completely in the final model (p for trend: 0.30, not shown in graphs).

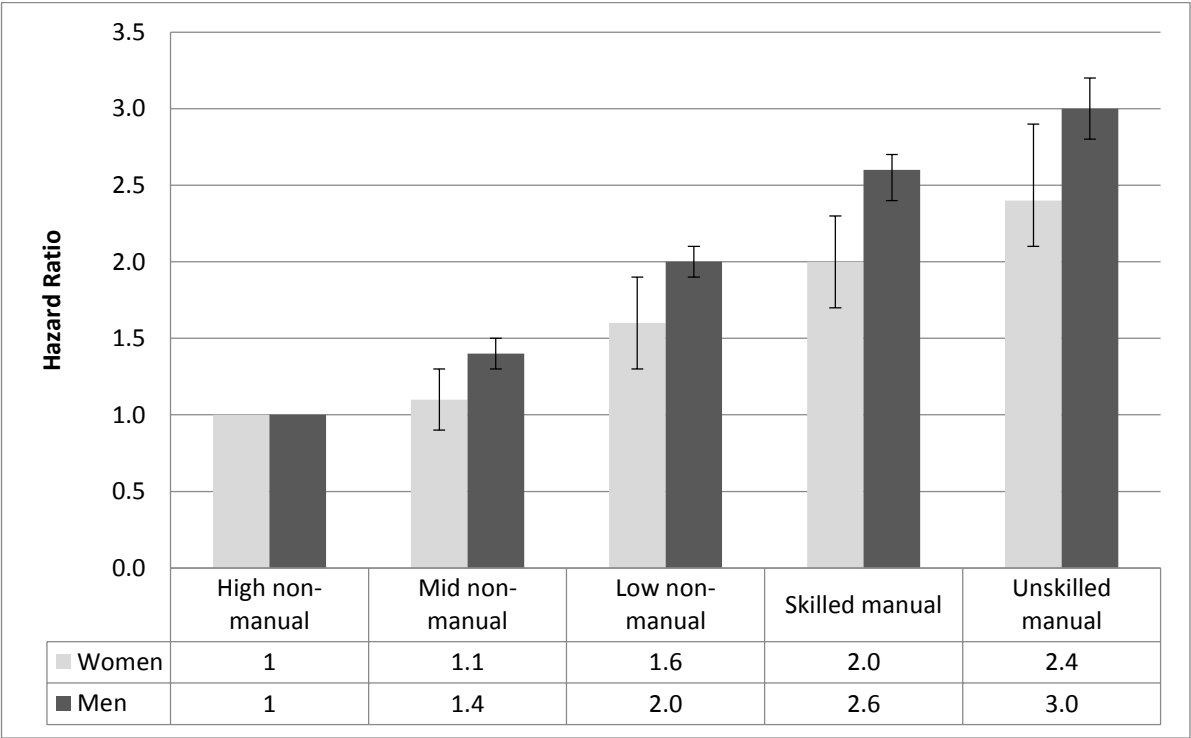
**Figure 10: Gender stratified hazard ratios (95% CI) for alcohol related disorders**



**Figure 11: Gender stratified hazard ratios (95% CI) for acute alcohol intoxications**



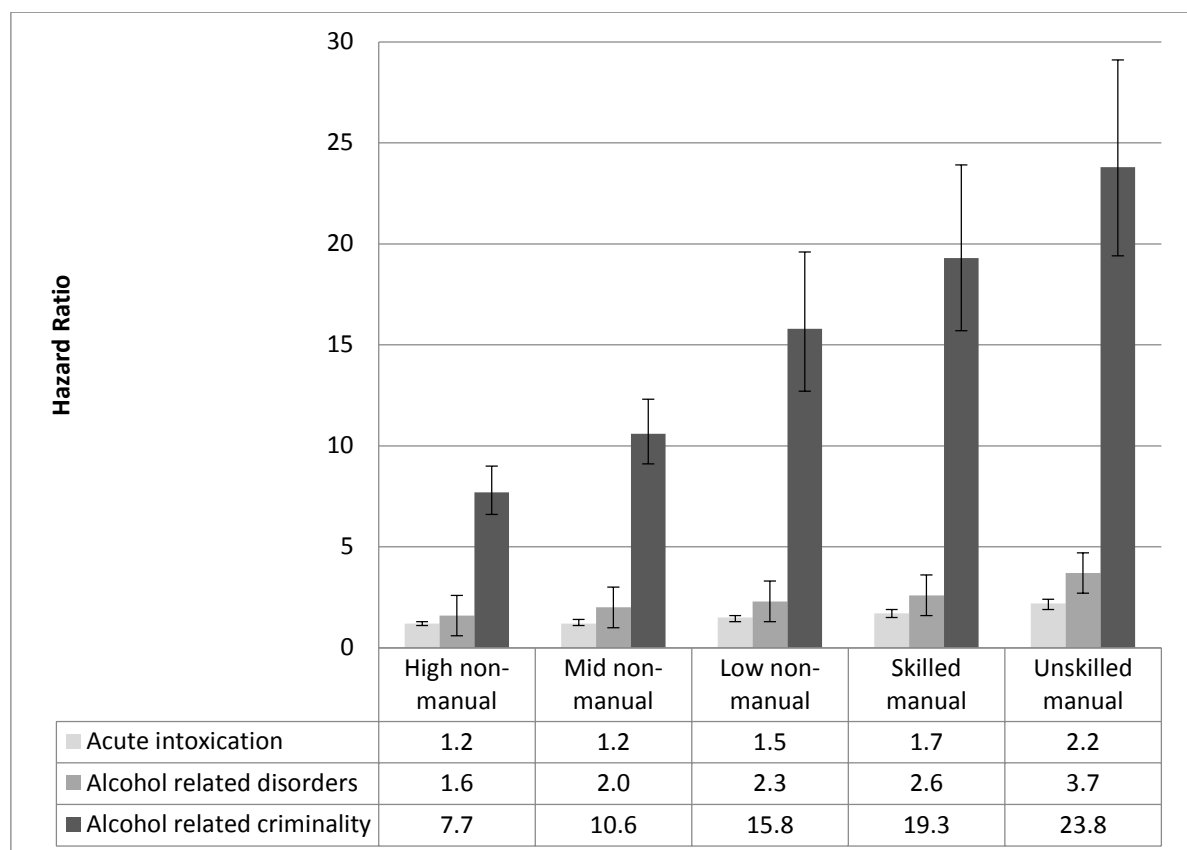
**Figure 12: Gender stratified hazard ratios (95% CI) for alcohol related criminality**



*To what extent does gender and socioeconomic background interact with regard to the risk of alcohol related problems in young adulthood?*

Using females from high socioeconomic background as a reference category, figure 13 demonstrates the additive interaction effects connected to socioeconomic disadvantage and male gender. For all three outcomes, interaction effects were present, but the hazard ratios differed strongly depending on outcome. Alcohol related criminality stands out as the outcome with extremely high hazard ratios connected to low socioeconomic background and male gender.

**Figure 13: Hazard ratios for alcohol related problems in males compared to females with high socioeconomic background**





# 7

## Discussion

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A life course perspective does not only provide epidemiological research with testable models, but also with a structure from which to build a narrative about health and disease development in individuals and populations over time; from childhood, adolescence, young adulthood and older age. After a summary of the main findings, this section will discuss three stages in the studied disease trajectory:

1. the root of the problem in childhood
2. the embodiment of inequality beginning in adolescence
3. the final manifestation of the problem in adulthood and the intergenerational transfer of social and health related inequalities

This chapter will conclude with methodological considerations and a discussion of strengths and weaknesses of the studies.

### 7.1 Main findings

We found a clear socioeconomic gradient in the risk for alcohol related disorders, confirming previous studies that have found a connection between socioeconomic disadvantage and alcohol related illness. However, our clear results stand in contrast to a systematic review on childhood socioeconomic position and alcohol use, misuse and dependence later in life, which found no such association (25).

In the second study, we found that poor school performance had a remarkably strong association with alcohol related disorders later in life. Good school marks in compulsory school provide opportunities for high-standard education in the final years of secondary school, as well as university, and thus the possibility of eventually obtaining a well-paid job with good benefits. The individual may acquire a number of health promoting, material and educational resources along the way that may be protective against the adverse effects of high alcohol consumption. We also found that the socioeconomic

gradient found in the first study disappeared after adjusting for school marks. In other words, the socioeconomic gradient could be entirely explained by socioeconomic differences in school performance. If a student performs well in school, their socioeconomic background did not influence their risk of developing alcohol related disorders.

The third study confirmed previous research, finding a strong and cumulative association between indicators of CHD and alcohol related disorders in young adulthood. CHD interacted with socioeconomic background, such that multiple experiences of CHD in combination with low childhood SEP were cumulative, resulting in a much higher risk for alcohol related disorders, compared to the population without CHD who were from a high socioeconomic background. However, analysing the effect of CHD in each SEP group separately, the relative risk to develop alcohol related disorders was similar in all SEP groups.

In extending the outcome variable in the fourth study to also include acute alcohol intoxications and alcohol related criminality, we conducted a more differentiated analysis of the relationship between social disadvantage and alcohol related problems in young adulthood. In addition, we also focused on the role of gender in this trajectory. We found alcohol related problems to be more common in the male population; however, this finding was more apparent in alcohol related criminality than alcohol related disorders or intoxications. Additionally, we found a slightly steeper socioeconomic gradient with regard to alcohol related criminality than for the other outcomes. This was true for both men and women, as was the strong attenuation in the socioeconomic gradient after adjusting for parental psychosocial problems and school marks. Furthermore, we found a strong interaction between gender and socioeconomic background, particularly for alcohol related criminality.

## **7.2 Root of the problem**

The fact that childhood is crucial for adult health is undisputed. The more specific question in this thesis is how the studied indicators of social inequality set the stage for alcohol related health disparities later in life. Looking at the adverse effect of childhood social disadvantage on health later in life, two potential mechanisms are commonly suggested (123).

The first mechanism focuses on poverty related deficiencies and stressors that by themselves may cause longstanding illness (124). For example, low birth weight and inadequate nutrition during childhood are more common in low SEP households and are linked to health problems such as heart disease, diabetes and obesity later in life

(125). Other childhood events which may directly affect alcohol related problems in adulthood are discussed in the third study of the thesis. This study suggests that parental psychosocial problems, parental death or divorce and child welfare interventions are in themselves, or may be indicators of, traumatic events which may increase the risk for mental health problems and alcohol misuse later in life. Also, indicators of household dysfunction were associated with socioeconomic disadvantage and explained part of the socioeconomic gradient in alcohol related disorders. This mechanism somewhat overlaps with the idea of a critical period within a life course approach, with adverse events in childhood having a more or less direct effect on health in later life. The second mechanism tends to focus on the importance of school. By doing so, it reflects the accumulation and chains of risk models in a life course approach, whereby a poor start in life may begin a chain of adverse events, e.g. increased risk of low school performance, followed by limited opportunity to access higher education, a lower-paid job or unemployment and poor health. The second study in this thesis showed that school performance is indeed a highly important step in the life course. Low school performance was the strongest singular risk factor for alcohol related disorders in young adulthood. Additionally, the socioeconomic gradient in alcohol related disorders disappeared after adjusting for school performance. This may be driven by school marks being an indicator of, and influenced by, much more than just cognitive ability. Rather, school performance captures relevant factors taking place before, after and during the school years, which will be discussed in more detail.

Firstly, early on in the life course, an individual's school performance is connected to the resources provided by their parents. Well-educated parents with high incomes have increased resources to assist their children with their school work, either directly themselves or by paying others to do so. Also, school selection has become increasingly important, as a consequence of rising socioeconomic segregation and substantial differences in performance between schools (126, 127). Although the formal opportunity for school selection exists for all parents and children, families with a higher SEP may encounter fewer hurdles in accessing this opportunity, such as language barriers, long travel distances or discrimination (128). Secondly, following primary school, good school marks increase access to high-quality secondary education, university education and a high SEP in adult life. This may account for the finding that childhood SEP was no longer important after accounting for school performance. A person who manages to perform well in school, despite being from a low socioeconomic background, has good opportunities to pursue upward social mobility. Lastly, school marks may encompass other characteristics besides how well the student meets the formal marking requirements. The ability to self-regulate is a factor that is often brought up in psychological literature as being associated with both low school

performance and alcohol related problems (129, 130). Given this, self-regulation is an important factor to consider, however it is also crucial to place this concept into a social context. Rather than being an inherent personality trait that exists independently from the individual's surroundings, self-regulation is highly influenced by environmental factors (131, 132). In a number of experiments, Baumeister et al (133) found that social exclusion from a group had a negative effect on self-regulation among experiment participants. The authors suggest that this could also be applied on the societal level – exclusion from the labour market, educational system and political representation through social stratification and discriminatory practices – generates aggression, criminality, low academic achievement, alcohol misuse and self-destructive patterns. These are phenomena that are often linked to impaired self-regulatory behaviour; however instead of placing the roots of the problem exclusively in the personality of an individual, Baumeister and his colleagues extended their analysis to include the possible influence of social inequality. There are also other plausible contributing factors to the ability of self-regulation. Lack of self-regulation may in part explain why students from high socioeconomic backgrounds with low school marks have considerably increased risk for developing alcohol related disorders, compared to their peers who differ only with regard to high school performance. Poor school performance among students from high SEP backgrounds, despite increased family resources for support, may suggest additional problems, such as neurodevelopmental disorders, e.g. attention deficit hyperactivity disorder (ADHD) or other conditions associated with a lack of self-regulation, low school performance and alcohol related problems (134, 135). Also social problems in school, including bullying, could mediate the relationship (136).

In the fourth study, male gender in combination with social disadvantage increased the risk of alcohol related problems in young adulthood. Given the combined risks of being male and being socially disadvantaged exceeded additivity invites us to apply an intersectionality perspective; however, since this approach generally studies the interaction between multiple systems of disadvantage and discrimination, it may not be entirely applicable to the situation of socially disadvantaged men, who still enjoy some privileges in comparison to disadvantaged women. There are several other plausible explanations, on a broad theoretical spectrum, which may explain the gender gap in alcohol related disorders. The sociologist Raewyn Connell describes how social theory has moved away from the notion that 'gender' is nothing more than the cultural expression of a natural difference between the two stable categories, 'male' and 'female'. Instead Connell's focus lies on gender as contingent of social arrangements and practices that may confirm, but also contradict and complicate, our traditional idea of masculinity and femininity and how they are tied to physical and reproductive differences (137). The notion of gender as a changeable social practice, rather than an



inevitable expression of a biological difference, does not imply that gender is not an important factor. Rather, the social and health related inequalities connected to gender are established early in childhood. A possible explanation for the gender gap in alcohol related problems lies in the highly gendered social norms surrounding alcohol consumption. Whereas female drinking historically has been restricted both legally and culturally to a larger extent than male drinking, alcohol consumption in men complies with traditional notions of masculinity. Even in the case of excessive alcohol consumption, male drinking may be regarded as problematic though not abnormal, as opposed to female alcohol misuse. Specific alcohol related activities, such as driving under the influence, may be particularly tied to masculine gender norms of risk-taking and overestimation of one's ability. Another reason for differences in alcohol related problems of men and women may be the highly gendered socialisation process surrounding appropriate management of stress and emerging problems. While social position and experience may lead girls to internalize problems to a larger extent, boys learn to externalize problems and act out with aggression and antisocial behaviour (138). Externalizing behaviour in childhood is strongly associated with alcohol and substance misuse in adolescence, and might therefore be one of many early contributors to the gender gap in alcohol related problems (139).

### **7.3 Embodiment of inequality**

This section will discuss the way social inequality manifests as alcohol related health disparities by coming back to the concept of embodiment. Again, embodiment refers to the process by which individuals biologically incorporate their social and physical environment. Social and economic deprivation, toxic environments and discrimination leave traces in the human body and these differences are expressed as health inequalities. Although this is a continual process taking place over the entire life course, the period of youth (defined by the United Nations as between the ages of 15 and 24 years, which includes the adolescent and early adult period) is particularly important with regard to alcohol related health inequalities (140). In studies of alcohol related disorders, this time period is important for a number of reasons beyond the most obvious being the alcohol itself. If people did not drink at all, there would be no alcohol related health inequalities, no matter how unevenly distributed other forms of health conditions would be. The period of youth is important to consider partly because alcohol consumption and other health related behaviours are initiated during this life stage. In addition, this is a time where a relationship with the social environment is formed; factors such as education and first employment are in themselves important health determinants, as well as also affecting health behaviours. Finally, factors related

to public policy and the political economy are also of importance, since they determine opportunity for adolescents to become socially mobile. A social safety net, active labour market policies and tuition-free education provide support and choice for an individual to shape their own life independent of parental resources and are as such a central component of social and health related equity (141).

The background section touched upon the national and regional alcohol surveys that have been conducted in the adolescent and adult population. The cities of Stockholm and Gothenburg reported higher adolescent alcohol consumption in affluent areas, while the national public health surveys did not find any substantial socioeconomic or educational differences with regard to levels of alcohol consumption or binge drinking. The slightly increased frequency of risky consumption in males with low SEP found in these surveys does not accord with the alcohol related health inequalities reported in the empirical studies of this thesis. Given that the alcohol related health inequalities do not reflect socioeconomic or educational differences in alcohol consumption, we can dismiss the notion that disadvantaged populations are disproportionately affected by alcohol related health problems solely due to increased consumption. The tendency to overstate personal responsibility and blame the individual for illness is a convenient yet simplified approach to diseases related to hazardous product consumption. Such reasoning can be used to justify removal of rights to social and medical services and as a distraction from the adverse health effects caused by corporate practices in the food, alcohol and tobacco industries (142-144). Critiquing an overly strong emphasis on individual responsibility does not deny the existence of health-related human agency. Naturally, individuals have some control over their health hazardous behaviours, however some people may have more control than others.

There is a large body of literature on genetically and socially induced vulnerability to alcohol and other substances. The commonly used 'Cloninger's typology' of alcohol addiction refers to a study of Swedish adoptees and their biological and adoptive parents (145). The aim of the study was to disentangle the effect of genetic and environmental factors on alcohol misuse, which resulted in two types of addiction being defined. Type I alcoholism is characterised by a comparably late debut and is preceded by a long time of high alcohol consumption predominantly in social settings. The tipping point is often induced by some external event (e.g. job loss or divorce), and while the individual is remorseful about drinking, they continue in order to relieve stress or anxiety. Type II alcohol addiction has an early onset, with a prominent inability to abstain from alcohol from the beginning. In contrast to type I addictions, the severity of alcohol dependence is not progressive. Alcohol consumption is less connected to social settings and the individual drinks in order to induce euphoria, as opposed to relieving

any stress or pressure. These two types of alcoholism have been used to illustrate the contribution of genetic and social factors to individual alcohol vulnerability. Whereas the connection between alcohol misuse in birth parents and offspring was relatively weak in the population with type I addiction, it was much stronger among alcoholic adoptees classified with a type II addiction. The adoptive environment contributed to frequency and severity of type I cases, however only affected severity among those with type II addictions.

It is clear that genetic factors play a crucial role in the development of alcohol and drug misuse; heritability, i.e. the proportion of variation in alcohol dependence related to genetic factors, is estimated to be around 50 percent (146). However, there is no single 'alcoholism gene', but rather several hundred or thousands of genetic factors contributing to the overall influence of genetics on alcohol related disorders (147). Recent developments in technology have opened many doors for research on the influence of genetics on health and disease. Since 2005, genome-wide association studies (GWAS) have been used to cost-effectively map and connect thousands of genetic variants in large populations to complex diseases such as alcohol dependence. Studies investigating the mechanisms behind genetic vulnerability to alcohol often focus on factors that inhibit or stimulate excessive alcohol consumption. The genetic variations that result in inactivation of enzymes involved in alcohol metabolism are an example of the former. Even small amounts of alcohol can cause facial flushing, nausea and other adverse effects in individuals with this genetic setup, which makes excessive alcohol consumption and dependence very unlikely in this population. The genetics behind the biological mechanisms stimulating high alcohol consumption requires further investigation. There is sound evidence suggesting that neurotransmitter receptors, such as the gamma-aminobutyric acid system, play a significant role. The way these receptors respond to alcohol and interact with the central nervous system, which will have consequences for intoxication and withdrawal symptoms, may be affected by genetic variation (148, 149). As of today, the GWAS are in an early stage and more studies that will elucidate this complex topic are likely to follow in the near future.

The emphasis of genetic factors has helped define alcohol dependence as a medical condition eligible for considerable public funding for research and treatment. The medicalization of addiction may also have led to a certain de-stigmatisation of the condition, since the disease can be seen as beyond individual control. However, as will be further discussed in the section about the social consequences of alcohol related health inequalities, diseases are also attached to particular social stigmas, which might just replace any previously held. To frame addiction as a disease may be accurate to some extent, however it may also lead to an over-simplification of the complex

interactions between biological, psychological, cultural and social factors contributing to the development of alcohol dependence. The disease label runs the risk of reducing the field of addiction to genetic determinism and brain chemistry, which is far from full picture. Rather, the genetic impact may be contextual; a specific genetic setup may be more sensitive to a particular environmental stressor than others. It is also not evident that this triggered stress reaction will lead to addiction; it may take the form of obsessive compulsive behaviours or other mental health problems which correlate and share attributes with alcohol and drug dependence (150, 151). Studies on genetic vulnerability to alcohol generally acknowledge a strong importance of the social environment for the development of addiction and other alcohol related disorders. It is undisputed that social factors greatly influence an individual's exposure and vulnerability to alcohol and the risk of developing alcohol related illnesses. Differential exposure is a main cause of the gender differences in alcohol related disorders, however does not explain the substantial social inequalities that are reported in the empirical studies of this thesis. Since there is no social stratification in genetic variation, alcohol related inequalities found in these studies are likely to be a product of social differences in alcohol vulnerability (152). To understand how social inequality may lead to a differential vulnerability to alcohol, the five pathways of embodiment, as suggested by Nancy Krieger, may be considered.

*Economic and social deprivation* contributes to alcohol vulnerability in different ways, many of which are associated with the general health status of the individual. Insufficient or inadequate nutrition will increase vulnerability to alcohol through a general deterioration of a person's strength and health, but also more specifically for some alcohol related disorders such as Wernicke-Korsakoff syndrome, which is caused by an alcohol-induced thiamine deficiency (153). Other health conditions more prevalent among low socioeconomic groups, such as diabetes (154, 155) and hypertension (156), are also adversely affected by alcohol consumption.

*Toxic substances and hazardous conditions* may increase vulnerability among socially disadvantaged groups. Given that alcohol itself is a toxic substance, there is a proportion of alcohol related mortality that is directly attributable to the consumption of low-quality or non-beverage alcohol. A study of a Russian population found that the widespread consumption of cheap alcoholic liquids, such as eau de colognes and medicinal tinctures, greatly increased the risk of mortality, when compared to drinking conventional alcohol (157). Although this kind of alcohol consumption may be quite context specific, there are also Swedish studies investigating socioeconomic differences in other types of toxic exposures, such as medical and illicit drugs, which may increase vulnerability to alcohol (158, 159).

*Socially inflicted traumas* may increase exposure and vulnerability to alcohol in ways similar to those discussed regarding CHD. There is a clear socioeconomic gradient in the CHD events, and alcohol may be used as a way of coping with traumatic experiences. Subsequent mental health problems may intensify the adverse consequences of alcohol consumption in at least two ways. Firstly, co-occurrence of mental health problems, such as depression or anxiety disorders, and alcohol misuse may lead to a mutual aggravation of the conditions (160). Consumption of psychotropic drugs, which has been shown to be much higher in the population with adverse childhood experiences, may also exacerbate the health effects of excessive drinking (161, 162).

*Targeted marketing of alcohol* has been a relatively small problem in the Swedish context, due to an alcohol retail monopoly and a long history of restrictions on alcohol advertising. There are, however, several US studies reporting a higher density of alcohol retailers in low-socioeconomic and deprived neighbourhoods, and as such, higher alcohol consumption (163, 164). These neighbourhoods also have a higher concentration of outdoor advertising and billboards promoting alcohol (165-168). Regulations on alcohol advertising and retailing have a particularly strong effect on alcohol consumption among young people. Despite the Swedish ban on alcohol advertising being lifted in 2003, it is still forbidden to target alcohol advertising towards people under the age of 25. Nonetheless, there are reports suggesting that Swedish alcohol advertising increases drinking particularly among youth (169). Based on experiences in other contexts, the privatisation of Swedish alcohol retailing would most likely lead to price reductions, higher outlet density and less effective enforcement of the minimum legal drinking age. This would increase alcohol accessibility for the population in general and for youth, heavy drinkers, and low-income groups in particular (170).

*Inadequate health care* is the final suggested way in which social disadvantage is embodied and is a pathway of particular relevance in contexts without universal health care coverage. An US study found that approximately 45,000 deaths among 18-64 year olds in 2005 could be attributed to a lack of health coverage (171). Unsurprisingly, a lack of health insurance was related to a low income, and also higher alcohol consumption. Although Sweden has almost universal health care, it is possible that some of the health inequalities previously discussed may be attributable to inequality in health care provision. Focusing specifically on health care related to alcohol and drug misuse, there are reports suggesting that individuals with social difficulties who seek help for alcohol or drug misuse are often referred back and forth between doctors and social workers; people without these issues, on the other hand, receive immediate medical treatment for their alcohol misuse (172). Although our fourth study showed

that alcohol misuse is of particular public health concern among males, the female minority of the population with alcohol related disorders may be particularly vulnerable to inadequate or discriminatory medical care. Studies suggest that women suffering from alcohol and substance misuse may be more reluctant than men to seek medical care for fear of violence or sexual harassment in mixed gender treatment groups. Women may also fear a strong stigma attached to alcohol misuse among females, which may lead to marginalisation and also legal repercussions, such as losing custody of children (173).

To conclude, social inequalities in alcohol related disorders found in empirical studies can be largely attributed to social differences in alcohol vulnerability. This can be seen through the pathways of embodiment, which illustrate how social inequality may translate into alcohol related health disparities. The following section will address the last step in the Diderichsen framework and discuss the consequences of alcohol related health inequalities.

#### **7.4 Consequences of alcohol related health inequalities**

Alcohol related disorders have several adverse consequences for the individual and their close environment. This section will discuss three dimensions of these consequences: 1) the extent to which alcohol related disorders contribute to further social stratification; 2) the social stigma attached to alcohol misuse; and 3) the extent to which alcohol related disorders contribute to the intergenerational transfer of health inequalities.

Diderichsen and colleagues open their discussion on the social consequences of ill health with a reference to Amartya Sen's critique of the 'equality of resources' perspective. Just as Sen questioned the focus on resources purely for the resources' sake, Diderichsen and colleagues encourage us to also look beyond health and towards what follows health, or a lack thereof. Ill health is never desirable, however misery definitely comes in many different shapes and colours. First of all, the type of disease is an important factor which will determine its social consequences. Alcohol related disorders are a prominent group of conditions with a broad range of adverse social consequences, aside from the short- and long-term health concerns. This includes unemployment and other job challenges, legal and financial difficulties, accidents and violence, and complications with family, friends, relatives and partners (174). Depending on the severity of alcohol misuse, many of these problems will be unavoidable, regardless of how privileged a person may be. However, it is clear that

social inequality will influence how an individual is affected by these social consequences.

Firstly, even short-term job loss and unemployment will have a greater impact on individuals who are unable to cover medical and every-day expenses, either through their own savings or through support from a close social network. Not only do the alcohol misuse and subsequent illness come with high costs, but a financially burdened family may also be particularly affected by the loss in income. Secondly, the consequences of police arrest due to alcohol related criminality may be more severe for socioeconomically disadvantaged individuals, who may have greater difficulties in paying fines and other legal expenses, as well being more likely to apply for jobs that routinely include a criminal background check or require a driving licence (175, 176). Aside from this, the biased and discriminatory idea of the 'usual suspect' may lead to racial and socioeconomic profiling, as well as stricter and more frequent law enforcement in deprived neighbourhoods (177). Finally, an individual's social network will have a great influence on the consequences of alcohol misuse, although the connection to socioeconomic background is not entirely obvious in this case. In some instances, a well-functioning social network may compensate for a lack of other resources, while wealth and high education will not prevent alcohol misuse leading to the destruction of close relationships. However, the combination of economic, educational and social resources and networks may increase access to adequate care and de-escalate alcohol misuse before social misery and isolation ensue. The severity of social consequences following alcohol related disorders and other forms of sickness will, of course, depend on the socio-political context. In a functioning welfare state, universal health coverage, unemployment benefits and other types of social insurances will create a buffer against the adverse social consequences of illness which would otherwise have affected the most disadvantaged the hardest.

Another adverse social consequence of alcohol related disorders is the stigma attached to addiction and other forms of alcohol related illness. A stigma is a literal or figurative mark that associates an individual to a discredited collective and is linked to disapproval and societal rejection, which will exacerbate social marginalisation and often lead to isolation and health problems (178, 179). In a review on the connections between social inequality, alcohol use and stigma, Robin Room lists three areas of stigma related to alcohol (180). The first area concerns consumption; at specific places and during specific times of the day, alcohol consumption is regarded as inappropriate and the individual will be stigmatised. Depending on context, the stigma may be more severe, or apply to wider areas of life, for some population groups. For example, a greater stigma may be attached to female, compared to male, alcohol consumption. The

second area concerns intoxication. Also heavily context dependent, intoxication may be considered less of a problem in a bar or night club setting, whereas it is regarded as highly inappropriate in the workplace. The third area concerns addiction or dependence. As a consequence of the medicalization of alcohol dependence, stigma related to this condition is comparable to stigmas surrounding mental illness. Both the second and the third area of stigmatisation are connected to short- or long-term loss of self-control. The stigma will be smaller if the individual manages their intoxication or addiction without relying too heavily on others. This is where the stigma of addiction connects to social inequality. A socially disadvantaged person may have fewer resources enabling them to manage their alcohol misuse, without requesting assistance from members within or outside their social network. Issues of self-control, personal responsibility and addiction are discussed in another study by Room in which he identifies a paradox in modern consumer societies (143). In accordance with neoliberal ideals, alcohol can be considered a product that should be freely accessible in an unregulated market. This results in an increase of alcohol consumption, which may translate into societal and economic problems as certain activities, such as working, driving and taking care of children, requires sobriety. The ideological solution lies in the stigmatisation of both abstinence and excessive drinking; both which are believed to reflect lower self-control, while the moderate drinker is idealised as being both a good consumer and a responsible worker.

The third dimension of adverse consequences concerns the intergenerational transfer of alcohol related health inequalities. Children with an alcohol-misusing parent are perhaps the most affected group within the user's close social environment. Parental alcohol misuse can have a number of health related and social consequences that will adversely shape the child's life in the short and long term. Due to the combination of genetic heritability and social environment, there is a strong intergenerational transfer of alcohol related disorders (181). Maternal alcohol consumption and misuse during pregnancy increases the risk of foetal alcohol syndrome, which is related to a broad range of complications including growth deficiency, cognitive impairment, poor short-term memory, poor mental health, school failure, and social difficulties (182, 183). Parental alcohol misuse during childhood is listed as an indicator of CHD and is associated with other adverse childhood experiences such as abuse and neglect (184). In homes with parental alcohol misuse, children may need to take care of their parents, siblings and the household, which may lead to lower school performance and disruption in school education (185). In adult age, children with experiences of parental alcohol misuse face increased risk of a large cluster of problems, aside from own alcohol or drug misuse; such as premature mortality, mental and somatic illness, low education, unemployment and criminal convictions (186). The studies in this thesis have shown



that social disadvantage in childhood, which includes the highly interrelated factors of low parental SEP, low school performance and experience of CHD, increases the risk of alcohol related disorders in young adulthood; which has an adverse impact on the next generation, and subsequent generations thereafter. The complex interaction between social disadvantage and alcohol related disorders demonstrates how alcohol misuse can contribute to the preservation of social and health related inequalities within and across generations.

## **7.5 Strengths, weaknesses and methodological considerations**

The data and design of our empirical studies come with a number of advantages, but also some limitations. An obvious strength in conducting register based, epidemiological research is related to the significant size of the study cohort. Our large sample allowed for detailed regression analyses, including tests for interaction and effect modification. Even with a rare outcome, as was the case in some subgroups, the analyses delivered precise results with high statistical power. A second advantage in using register data is the high number of detailed variables that we were able to use to measure both social disadvantage in childhood and alcohol related problems later in life. A third advantage is the strong potential to conduct longitudinal studies that follow individuals over the entire life course. This is made possible not only through the national registers, but also extensive record linkage through the Swedish PIN system.

The studies included also have some general and methodological weaknesses that can be addressed in terms of external validity and the systematic errors commonly found in observational studies.

### **7.5.1 External validity**

As discussed in the background chapter, the relationship between social inequality and alcohol is highly contextual. In some countries, social advantage is related to high alcohol consumption whereas other countries show an inverse relationship. Regardless, the association between social disadvantage and alcohol related disorders seems quite robust and contextually independent, and this thesis contributes to that body of literature. Nevertheless, before generalising the results to other contexts, careful consideration of the specific aspects of the Swedish labour market, educational system and welfare state should be taken.

### **7.5.2 Selection bias**

This type of bias is usually not a major problem in studies using national registers since, by default, they include the entire population. Selection bias may however result from exclusion criteria introduced by the researchers. In our studies, we excluded individuals with missing or ambiguous information for parental SEP (9.4 percent), since the results for this group would be very difficult to interpret. Also, the migrant population was excluded from analyses due to an absence of register data on childhood factors. Given the significant proportion of the population born outside of Sweden, these studies are not representative of the entire Swedish population.

### **7.5.3 Information bias**

Flawed measurement of the study variables may lead to information bias. Comparing the national registers with survey material, the former obviously has an advantage in terms of size and attrition, however survey material has the advantage of being more detailed. Swedish registers deliver good socioeconomic indicators, comprehensive school records and a number of variables indicating CHD. We were unable, however, to replicate studies of adverse childhood experiences which, beyond CHD, also include experiences of child neglect and abuse. In terms of the outcome variable, register data has both strengths and limitations. A major advantage is the lack of disclosure bias, which could be a significant problem in survey based studies, due to the stigma attached to alcohol misuse. On the other hand, we only have access to quite specific types of alcohol related disorders, namely the most severe of cases which require hospital care. In other words, the proportion of alcohol misuse that remains hidden from these studies is likely to be large, perhaps even more so in certain population groups. People with a lot of resources and a high SEP may have access to alternative safety nets, making hospitalisations unnecessary. However, due to the severity of the alcohol related disorders studied in this thesis, it is quite improbable that these conditions would have been managed without hospital care. Referral bias, due to social factors, could be more common. Medical doctors could possibly be more likely to give an alcohol related diagnosis to an individual reflecting the stereotype of an alcohol addict. Disorders that are not immediately associated with alcohol misuse, such as gastritis, polyneuropathy or cardiomyopathy, may be misclassified due to the patient's social background or gender. This might also be the case in the fourth study, in which we have expanded the outcome measure to include acute alcohol intoxication. Again, the social background and gender of the intoxicated person may be related to the probability of being transported by ambulance to the hospital or by police car to a holding cell.

#### **7.5.4 Confounding**

Confounding is of central importance in observational studies, and in many cases register data offers limited possibilities to control for potential confounders. In the second study, in particular, we were unable to adjust for variables which may affect both school performance and alcohol related disorders, such as neurodevelopmental disorders, social exclusion and bullying. This is something that would be important to consider in studies using other data sources, such as public health surveys.

#### **7.5.5 Statistical models**

The included studies make use of two types of statistical models: logistic regression models and the Cox proportional hazard models. The Cox model makes the assumption that the effect of a variable is proportional, i.e. constant over time. This assumption is easily violated if the outcome variable consists of multiple measures with varying follow-up time. Our outcome variable of alcohol related disorders consists of data on inpatient care, collected from age 15 years, and outpatient care collected from year 2002. Although non-proportional hazards can be interpreted as the average effect of the exposure (187), the violation of this central assumption may call for alternative modelling techniques. This was especially the case in study III, in which we had no need to include a wash-out period, and therefore conducted statistical analysis using logistic regression.

### **7.6 Conclusion**

Childhood social inequality was associated with alcohol related health disparities later in life. The three interrelated forms of social disadvantage; low socioeconomic background, low school performance and experience of childhood household dysfunction, were all connected to an increased risk for alcohol related disorders in young adulthood. The socioeconomic gradient disappeared when adjusted for school performance, which points to the great potential of schools to promote population health and health equity. Social disadvantage was also associated with acute intoxication and alcohol related criminality, with the male population showing a particularly high risk for such outcomes. As in all epidemiological studies, these findings are only valid on a group level and do not say anything about individual cases.

Comparison of the results with national public health surveys on drinking habits makes it clear that alcohol related health disparities do not reflect large social differences in alcohol consumption. The fact that similar consumption levels have different health effects is rather likely to be related to differential social vulnerability. The advantaged

population has material, educational and social resources to create a buffer against the negative effects of alcohol. In contrast, social adversities get under the skin of the disadvantaged population, which in combination with high alcohol consumption will more likely lead to disease or even death. These divergent processes are conceptualised as the embodiment of inequality. Following a life course perspective and the framework of the pathways between social context and disease, three life stages can be identified: 1) Childhood, in which early social stratification sets the stage for health inequalities later in life; 2) youth, in which alcohol consumption and the embodiment of inequality are initiated; and 3) adulthood, in which the alcohol related disorder is a fact and will have differential consequences dependent on individual social position. All three of these life stages are important to take into account when developing prevention strategies targeting alcohol related health inequalities.

# 8

## Implications for research policy and practice

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This final section will address the question whether alcohol related health inequalities are unfair and discuss potential strategies to target them. It will conclude with some recommendations for future policy and research.

### **8.1 Are alcohol related health inequalities unfair?**

The background section addressed the distinction between health differences and health inequalities. According to the definition by Paula Braveman, a health inequality is a type of health difference in which disadvantaged groups systematically experience worse health than more advantaged groups. This thesis has shown that this is the case with regard to alcohol related disorders. The question of the extent to which these alcohol related health inequalities are unfair is politically controversial. To a perhaps larger extent than other health conditions, illness that can be linked to behaviours such as drinking, eating, smoking, exercising and sexual activity are often discussed in terms of individual failure and are attached to a moral stigma. On the other hand, there are still many researchers and policy makers calling for more structural explanatory approaches for health inequalities including those related to alcohol consumption and other types of relevant health behaviours (180, 188).

The fact that the social inequalities in alcohol related disorders are not reflected by social differences in alcohol consumption is perhaps the strongest reason for disregarding explanations focusing only on individual behaviour. Using the terminology of Amartya Sen, people have unequal 'real opportunities' or capabilities to lead healthy lives. Some have the resources, the knowledge and the social networks that allow for potentially hazardous alcohol consumption without adverse health consequences. Others are more socially vulnerable to the potential effects of alcohol, and similar drinking behaviours may lead to completely different health outcomes. Social

inequalities in alcohol related disorders could be contrasted with the gender gap identified in the fourth study. The higher prevalence of alcohol related disorders in the male population is more related to gender differentials in alcohol exposure, which might lead to the conclusion that these health inequalities are not as unfair as the social inequalities described above. On the other hand, as individuals, family members and the society at large have very good reasons to strive for reduced alcohol related disorders in the male population, the question of fairness is perhaps more or less irrelevant.

## **8.2 Targeting alcohol related health inequalities**

Another aspect of Braveman's definition of health inequalities is the potential to shape them with policies. In 2002, the Swedish social democratic government specified a national public health goal: 'to create societal conditions for good health on equal terms for the entire population'<sup>1</sup> (189). This goal remained unchanged during eight years of leadership by a centre-right government and has also survived the most recent shift back to a government led by the Social Democrats. Formally, there seems to be a well-established political consensus around the general objective of good and equal population health, but when comparing policy documents of differing Swedish governments, it is clear that the strategies to achieve the national public health goal are ideologically contested (189, 190).

The political debate surrounding the appropriate way to target health inequalities overlaps with the sociological discussion around the potential of a person to act within a given social structure. Questions regarding personal responsibility for one's own health and society's obligation to assist the individual to live a healthy life divide sociologists and politicians alike. There is however some agreement regarding the health of children. Although expressed differently, both social democratic and centre-right governments in Sweden emphasise the public health importance of guaranteeing children a good start in life. Also, as children are not regarded as being responsible for their own social situation or health, society has an important role to play in compensating for potential disadvantages related to the parental household or other social factors. This consensus may serve as a starting point in developing strategies to challenge the relationship between childhood social disadvantage and the increased risk for alcohol related disorders later in life.

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<sup>1</sup> "att skapa samhälleliga förutsättningar för en god hälsa på lika villkor för hela befolkningen"

### 8.3 Prevention over the life course

As discussed in previous chapters, there are several studies which use the life course perspective in order to show how childhood factors affect health later in life in direct and indirect ways. In addition, the life course perspective acknowledges that later life stages also have an impact on the chain of events enabling a healthy life. The discussion in the previous chapter was guided by the life course perspective by focusing on three life stages: childhood, youth and adulthood. In a similar way, the following section includes these three life stages when proposing strategies on how to target alcohol related health inequalities. When doing so, it can be helpful to compare the strategies with the traditional levels of prevention that depend on the stage of the disease. *Primary prevention* takes place before the disease has occurred and aims to stop it from happening in the first place; *secondary prevention* takes place after serious risk factors have been detected or the disease is in its very early stage and aims to nip the disease in its bud; and finally *tertiary prevention* takes place after the disease has been diagnosed and aims to alleviate its adverse consequences. These types of prevention fit well with a life course perspective on alcohol related health inequalities. Childhood is the time for primary prevention, whereas secondary prevention may be more appropriate during youth as this is the stage in which alcohol consumption is initiated and social inequality starts to become embodied. Tertiary prevention generally takes place in adulthood when the alcohol related disorder and its differential social consequences are a fact. The levels of prevention are summarised in Table 4.

**Table 4: Levels of prevention**

Level of prevention	What should be targeted?	When?	Aim
Primary	Social inequality	Childhood	Fight the root of the problem
Secondary	Differential exposure and vulnerability to alcohol	Youth	Prevent the embodiment of social inequality
Tertiary	Differential consequences of alcohol related disorders	Adulthood	Cure the sickness and alleviate its effects

The following strategies include a mix of evidence-based measures and informed suggestions that still need to be empirically tested in terms of their effect on alcohol related health inequalities. In addition to addressing the different stages of prevention, the strategies also include the different inequality dimensions of the empirical studies. The strategies are summarised in Table 5 and will be discussed further below.

**Table 5: Prevention strategies targeting alcohol related health inequalities**

<b>Dimension of inequality</b>	<b>Primary (childhood)</b>	<b>Secondary (youth)</b>	<b>Tertiary (adulthood)</b>
<b>Socioeconomic position</b>	<ul style="list-style-type: none"> <li>• Improve daily living conditions for children with low socioeconomic background</li> <li>• Redistribution of resources</li> <li>• Fight austerity politics hindering an optimal early life development</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain strict regulation of alcohol market (affecting general exposure)</li> <li>• Increase alcohol tax (affecting targeted exposure)</li> <li>• Investments in social safety net, social workers and police (affecting vulnerability)</li> </ul>	<ul style="list-style-type: none"> <li>• Universal health care</li> <li>• Increased resources to primary care facilities, especially in low socioeconomic neighbourhoods</li> <li>• Increased resources to addiction treatment and coordination of services</li> </ul>
<b>School performance</b>	<ul style="list-style-type: none"> <li>• Make school performance less dependent on parental background: promote students with less resources</li> <li>• Improving secondary school eligibility in all population groups</li> </ul>	<ul style="list-style-type: none"> <li>• Provide second chances: e.g. opportunities for adult educational qualification (improving social mobility)</li> </ul>	Same tertiary prevention strategies as above
<b>Family environment</b>	<ul style="list-style-type: none"> <li>• Intensified targeted assistance to children in dysfunctional households (especially children in substitute care)</li> <li>• Guard and promote universal social insurance programmes compensating for dysfunctional households</li> </ul>	<ul style="list-style-type: none"> <li>• Increased resources to mental health care (preventing that alcohol is used as a way of self-medication)</li> <li>• Extra support for youth with a history of childhood traumas</li> </ul>	Same tertiary prevention strategies as above
<b>Gender</b>	<ul style="list-style-type: none"> <li>• Early strategies targeting gender inequality and offering alternatives to traditional health-hazardous masculinity</li> </ul>	<ul style="list-style-type: none"> <li>• Continued strategies targeting gender inequality</li> <li>• Strategies to keep relatively low drinking levels in male youth</li> </ul>	<ul style="list-style-type: none"> <li>• Acknowledgement of men as a 'risk group': intensified screening of alcohol problems in men</li> <li>• Strategies targeting stigma of alcohol misuse in women</li> </ul>



### **8.3.1 Fight the root of the problem**

Similar to traditional primary prevention, the measures in childhood are the most general, but also the most cost-effective in the long run. The suggested strategies are not focused on alcohol related disorders specifically, but rather have the potential to reduce health inequalities in general and may in this way also prevent alcohol related health disparities. Sweden has traditionally earned international recognition for high social equity and societal coherence, but since the 1990s the increase in income inequality has been among the largest within the Organisation for Economic Co-operation and Development (OECD) (191). This means that children in Sweden are now born into widely unequal circumstances. Social inequality in childhood is the root of many problems and may be targeted in different ways.

A key recommendation of the global Commission on Social Determinants of Health was to improve daily living conditions as a way to guarantee good early child development. This point may be more acute in low and middle income countries, but it is in no way irrelevant in a European country with high costs of living and increasing relative poverty rates (192). The recent political initiative to transform the UN Convention on the Rights of the Child into Swedish law may be a step in the right direction to ensure that all children have the kind of living standard that is required to promote a good development (193). In order to do this, the inequitable distribution of resources should be tackled, as also suggested in the second key recommendation of the Commission on Social Determinants of Health. The global trend of rising inequalities has been discussed in reports by WHO, OECD and the International Monetary Fund (IMF) as a major contributor to social fragmentation, decreasing opportunities, stunted economic growth and adverse population health (194, 195). Redistribution (in the form of taxes and benefits) is an effective measure to target income inequality, yet a fiscal measure that targets the growing disparities in wealth is difficult to execute in a globalised world of free capital flows and tax havens. International agreements on the appropriate way to challenge tax havens and capital flight are crucial. Also, the social cuts that have followed the latest economic crises in Europe and America have been devastating for the situation of children in low socioeconomic households (196). Child well-being, economic development and social progress are among the many good reasons to fight harsh austerity politics.

Education plays an essential role in child development and has great importance for future population health. As shown in the second study, the importance of parental SEP for the risk for alcohol related disorders disappeared once adjusting for school performance, which points to the large potential of schools to compensate for a socially disadvantageous background. However, as parental SEP and school performance is

strongly correlated, schools can also be a platform for the reproduction of social inequality. Making school performance less dependent on socioeconomic background should be a key strategy when targeting health inequalities. This may include reforms of the school selection arrangements and funding mechanisms combined with targeted support for disadvantaged groups, as suggested in an OECD review on the Swedish education system (197). The second study showed that the alcohol outcome was strongly associated with low school performance, but as this is a relative measure, it is obviously not possible to aim for high school performance for everyone. However, the study also included an absolute measure of school performance which showed that ineligibility to further secondary education was highly associated with alcohol related disorders later in life. Striving to increase the eligibility to secondary school and to minimise the number of school drop-outs are potential political priorities that could have a long-term positive effect on population health and health equity.

Schools have a high compensatory potential for children from troubled backgrounds but they cannot carry the burden alone. Children from dysfunctional households may need extra resources, attention and care in addition to what schools are able to offer. This is particularly true for children growing up in substitute care (198-200). For children growing up in dysfunctional households, the universal and tax-funded social insurance system is valuable. It provides the children and their economically deprived families with a number of important measures that may compensate for the disadvantageous family environment. The universality of these measures should be guarded and promoted.

According to Amartya Sen, we should not only strive for equitable distribution of resources, but education and other forms of assistance are also important in order to reach 'equality of capability'. In this thesis, the central capability is to achieve the 'functioning' of a life without alcohol related disorders. As the fourth study showed, this seems to be much more difficult for males compared to females but this is only partly related to other forms of disadvantage. The male population is not underprivileged with regard to the distribution of income, wealth and other resources; rather the opposite is true. Yet, boys do perform worse than girls in school, which is linked to lower education and possibly a higher social vulnerability later in life. It has been suggested that putting effort into school work is not considered to be consistent with persisting masculinity norms, which is a reason for boys' worse performance (201). Traditional masculinity may also be a driving force behind the typically male incapability to live a life without excessive alcohol consumption. However, the claim that gender is an unfixed social practice rather than a stable expression of a biological difference opens up the possibility of change. It would be good for the boys themselves, for their social

environment (including future partners and children), and for the society at large to be increasingly confronted with non-traditional forms of masculine practices that do not endorse behaviours such as drinking, fighting and speeding. In combination with strategies promoting gender equality at an early age, this may lead not only to better school marks among the boys, but also possibly better male health in adulthood.

### **8.3.2 Prevent the embodiment of inequality**

How can we prevent the translation of social inequalities in childhood into alcohol related health disparities later in life? On the pathway between social disadvantage and sickness, Diderichsen and Hallqvist identify hazardous exposures and vulnerability to disease causative agents as the two main mechanisms. The authors also argue that these two mechanisms are connected to potential policy entry points. In other words, strategies can be developed to minimise hazardous exposures and to reduce the vulnerability to these exposures. A central argument in this thesis has been that alcohol related health inequalities are connected to differential vulnerability rather than to differential exposure to alcohol. When developing strategies to reduce alcohol related health inequalities however, both exposure and vulnerability should be taken into account. Again, if people would not drink at all, there would be no alcohol related health inequalities, no matter how unequal the society would be.

There is strong evidence supporting the claim that privatisation of alcohol retailing would have a negative effect on general consumption levels and public health (202). If alcohol would be sold in privately owned retail stores or regular grocery stores, accessibility would increase as a consequence of higher outlet density and longer opening hours (170, 203). Turning alcohol into a regular commodity sold in the private market would also lead to increased advertising, decreased prices and most probably less strictly enforced minimum age limits, which would increase consumption in the general population and in youth and low-income groups in particular (204-206). A maintained alcohol retailing monopoly is therefore in the interest of general public health. To target consumption in specific groups, increased alcohol taxes or minimum pricing policies could decrease drinking in youth, low-income groups and heavy drinkers (207, 208).

What more can be done to reduce social vulnerability to alcohol? The previous section discussed strategies to fight the root of the problem in childhood. In addition, a number of measures can be taken in adolescence and young adulthood, where alcohol consumption has started and early social disadvantage begins to get under the skin of people. Continuous investments in social safety nets, social work and police may help to capture alcohol misuse in its early stages particularly in the population without

resources or an extensive social network. Allowing for second chances in the educational system, such as tuition-free secondary educational programmes for adults, may compensate for poor school performance and allow for social mobility at later life stages. Investments in mental health care could prevent the misuse of alcohol as a method of self-medication in youth with mental health problems or adverse childhood experiences. Extra support to youth with a history of childhood traumas should also be given. Finally, strategies that aim to reduce alcohol related health inequalities need to continue to take gender and gender inequality into consideration. The trends in Swedish youth drinking patterns are encouraging in this respect. In 2014 the alcohol consumption among 15 year olds was the lowest since measuring started in 1971, for both boys and girls (209). In fact, the Stockholm school survey indicates that abstention was slightly more common in boys and intoxication somewhat more common in girls (45). This seems to be related to a more rapid decrease in the young male population, and therefore also points to an important aspect of health inequalities between men and women. Gender equality in health is only desirable if it implies that the group with greater illness and more health hazardous behaviours adapts to the other group. Gender equality in alcohol related disorders is not desirable if this implies that women adapt their drinking to male levels, which, for example, has been the case for smoking in many countries (210). Strategies targeting male alcohol misuse could look at the factors that have contributed to comparably low alcohol consumption in teenage boys and investigate to what extent they have relevance throughout young adulthood.

### **8.3.3 Cure the sickness and alleviate its adverse effects**

From an equity perspective, it is crucial that there is adequate and universal health care available once the alcohol related disorder is established. Increased resources to primary care facilities, especially those located in low-income neighbourhoods, could enable them to identify and treat alcohol related disorders in early stages, which would prevent unnecessary costs and suffering. In contrast to other forms of medical care, Swedish addiction treatment is spread out and the responsibilities are divided between different agencies. Medical care, including psychiatric care, is provided on the county level, whereas social services and support are given by the municipalities. This system has led to difficulties for patients with co-occurring alcohol misuse and social problems and there have been calls for a closer coordination of the services provided (211). Medical care providers should also be gender sensitive. The strong risk increase of alcohol related disorders in men compared to women may call for intensified screening in the male population. However, this need not lead to neglect of women with alcohol related disorders; strategies dealing with the particularly strong stigma surrounding

female alcohol misuse are to be prioritised and may lead to more women seeking adequate care.

#### **8.4 Recommendations for policy and future research**

Although these prevention strategies can all be interpreted as policy recommendations, a number of them could be emphasised as particularly relevant for policies aiming to minimise the burden of disease caused by alcohol and to reduce alcohol related health inequalities

##### *1) Equity from the start*

This recommendation from the global report from the Commission on Social Determinants of Health has been repeated in countless papers and policy documents, but cannot be emphasised enough. Just like primary prevention is recognised to have a substantial, yet cost-effective positive health impact, early-life interventions have a great potential. Preschools, family assistance programmes, social services and child health care providers are crucial for enabling all children to receive a good and equitable start in life, regardless of their family background.

##### *2) Improve quality and equity of education*

Similar to a large number of other studies on health inequality, the results presented in this thesis give reason to emphasise the importance of education. Schools can provide individuals with invaluable resources enabling them to compensate for early-life disadvantage, become socially mobile and lead a healthy life. Improving the quality of Swedish education and reversing the trend of school performance becoming more dependent on the socioeconomic background should be top policy priorities.

##### *3) Target male drinking*

The studies showed that male gender was comparable with severe social disadvantage in terms of the relative risk for developing alcohol related disorders in young adulthood. As opposed to the risk increase in the socially disadvantaged population that is mainly driven by differential vulnerability, the fact that men are at higher risk compared to women is related to their greater alcohol exposure. Adverse male drinking culture is not easy to change instantly, but previous developments, e.g. continuous decrease of male smoking since the 1980s, show that it is not impossible. The relatively restrictive drinking culture that appears to becoming more common in male adolescents is encouraging. It would be a great public health advantage for men and their social environments if this trend would be maintained in older ages.

#### 4) *Keep the state alcohol monopoly*

Compared to other countries in the European Union, alcohol consumption and alcohol related disorders are low in Sweden (212). As previously discussed, a number of studies have shown that alcohol consumption and alcohol related harm increase as a consequence of the expanded availability and the reduced prices that would be likely to follow a privatisation of the alcohol retail market. For social, economic and public health related reasons, we are well advised to keep to a system that does not treat alcohol as a product among others in a next-to unregulated market, but rather as a paradoxical source of enjoyment with the potential for harm and illness.

#### 5) *Use the evidence base*

Alcohol is a contested topic engaging a large number of actors including non-governmental organisations, religious communities, political parties, but also a very strong industry that aims to expand its markets and increase sales. Research is by no means value-free, but it delivers important input to the debate, also with regard to the health consequences of alcohol. Future Swedish research should continue to make use of the great possibilities provided by the national registers. The population studied in this thesis is quite young and given the fact that many alcohol related disorders emerge later in life, the cohort should be followed as it gets older.

#### 6) *Consider alcohol in the national report on health equality*

The global report by the WHO Commission on Social Determinants of Health discusses alcohol quite peripherally. As the Swedish Commission for Equal Health delivers its final report to the government in 2017, it will hopefully pay attention to the way alcohol contributes to health inequalities in Sweden.

## 8.5 “There’s lots to learn, but so much more to unlearn”

*Human drama by Planningtonrock*

Adults have the responsibility to use their intelligence and their courage to return to the fearlessness of the child. Unlike adults, children do not take social facts for granted. We have to unlearn our beliefs regarding the inevitability of the outrageous inequalities that are killing more people than any single disease. We need to challenge authorities, institutions, conventions and ideas that maintain the notion that social inequalities as we see them today are unavoidable. There is nothing necessary in the fact that people sleep on the street outside of the guarded buildings of empty luxury apartments acquired not as homes, but solely as investment objects. There is nothing in human nature that explains the global gap in life expectancy of almost forty years or the fact that less than a hundred people own more than the poorest half of the world population. There is nothing inescapable about the fact that even in a rich country like Sweden, some people live shorter and sicker lives, just because the society fails or refuses to compensate for early-life social disadvantage. We need to unlearn this habitual way of thinking and we should never get used to inequalities or their consequences.





# 9

## Sammanfattning

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I denna avhandling behandlas sambandet mellan social ojämlikhet i barndomen och alkoholrelaterade hälsoskillnader senare i livet. Fyra empiriska studier fokuserar på olika dimensioner av social ojämlikhet och finner en tydlig koppling mellan social utsatthet och alkoholrelaterad ohälsa i vuxen ålder. Studierna använder sig av svenska nationella register och har med hjälp av ett anonymiserat personnummer kunnat koppla ihop register med varandra. Detta har genererat ett datamaterial med ett stort antal sociala och hälsorelaterade variabler för hela befolkningen född i Sverige mellan 1973 och 1984. Denna nationella kohort med cirka 950 000 personer har i första, andra och fjärde studien följts i registren till och med 2009. Den tredje studien innehåller material för befolkningen född mellan 1973 och 1982 och följs till 2013. I samtliga studier har regressionsanalyser genererat mått på den relativa risken för att drabbas av alkoholrelaterad sjukdom senare i livet. Den grupp med lägst risk har genomgående använts som referensgrupp med vilken resterande grupper jämförs med. Samtliga resultat visas också i diagramform i avhandlingens sjätte kapitel.

### 9.1 Resultat

Den första studien fann en tydlig och stegvis koppling mellan föräldrarnas socioekonomiska position och barnens risk att vårdas på sjukhus för alkoholrelaterad sjukdom senare i livet. Studien baserades på Statistiska Centralbyråns socioekonomiska inledning och visade att barn till gruppen icke-facklärd arbetare hade en mer än dubbelt så hög risk att utveckla alkoholrelaterad sjukdom jämfört med barn till gruppen höga tjänstemän. Även barn till tjänstemän på mellan- och lägre nivå samt barn till facklärd arbetare hade en förhöjd risk för alkoholrelaterad sjukdom jämfört med den högsta socioekonomiska gruppen. Sambandet blev något svagare efter att resultaten justerats för en rad demografiska variabler och föräldrarnas psykosociala problem (missbruk, kriminalitet och psykisk sjukdom), men kopplingen till socioekonomisk bakgrund var fortfarande tydlig.

Den andra studien fokuserar på kopplingen mellan skolbetyg i nionde klass och alkoholrelaterad sjukdom i vuxen ålder. Befolkningen delades upp i fyra grupper, baserat på nationellt betygsmedelvärde och dess standardavvikelser. I analyserna användes gruppen med högst betyg som referensgrupp. Låga betyg var starkt kopplat till utfallet, i gruppen med lägst betyg förelåg en över tio gånger så hög risk att hamna på sjukhus med alkoholrelaterad sjukdom jämfört med referensgruppen. Risker för gruppen med medelhöga betyg var cirka 60 procent högre än för referensgruppen, medan risken för gruppen med medellåga betyg var lite mer än tredubblad. Efter att resultaten justerats för föräldrarnas psykosociala problem och föräldrarnas socioekonomiska position kvarstod en åttafaldigt högre risk i gruppen med lägst betyg. Studien visade också att sambandet mellan låga betyg och alkoholrelaterad sjukdom senare i livet var starkare i gruppen med hög socioekonomisk bakgrund. De relativa skillnaderna var alltså större när hög- och lågpresterande grupper med hög socioekonomisk bakgrund jämfördes med varandra än när samma jämförelse gjordes i grupper med låg socioekonomisk bakgrund. Slutligen visade studien att de socioekonomiska riskskillnaderna i den första studien försvinner efter att resultaten justeras för skolresultat. Kopplingen mellan låg socioekonomisk bakgrund och alkoholrelaterad sjukdom som den första studien visade kan med andra ord förklaras av socioekonomiska skillnader i skolprestation.

Den tredje studien undersöker kopplingen mellan familjemiljö och risken att vårdas för alkoholrelaterad sjukdom senare i livet. Med hänvisning till tidigare studier som gjorts kring effekten av familjemiljö och så kallade skadliga barndomsfaktorer ("adverse childhood experiences"), fokuserar studien på ett antal omständigheter som kan tyda på en svår eller dysfunktionell uppväxtmiljö. Förutom de tidigare använda variablerna som användes för att mäta föräldrars psykosociala problem tar studien hänsyn till fyra ytterligare faktorer: 1) ensamstående föräldrahushåll eller skilsmässa, 2) förälders död, 3) socialbidragsberoende och 4) familjehemsplacering eller kontaktperson. Studien visar att det finns en tydlig och kumulativ koppling mellan dessa faktorer och risken att utveckla alkoholrelaterad sjukdom senare i livet. Studiens referensgrupp var den del av befolkningen med föräldrar i höga tjänstemannapositioner och utan några upplevelser av de faktorer som användes för att mäta dysfunktionell uppväxtmiljö. Jämfört med denna grupp hade befolkningen med liknande socioekonomisk bakgrund fast med en av ovanstående upplevelser en fördubblad risk för utfallet. Gruppen med två upplevelser av detta slag hade en fyrdubblad risk medan tre eller fler upplevelser innebar en sjudubblad risk. Dysfunktionell familjemiljö var vanligare i gruppen med låg socioekonomisk bakgrund och kunde delvis förklara de socioekonomiska skillnaderna som diskuterades i den första studien. De socioekonomiska skillnaderna var små i befolkningen utan antydning till dysfunktionell uppväxtmiljö medan låg socioekonomisk

bakgrund och tre eller fler upplevelser innebar en mer än åtta gånger så hög risk jämfört med referensgruppen.

Den fjärde studien undersöker sambandet mellan social ojämlikhet i barndomen och alkoholrelaterade problem i vuxen ålder ur ett genusperspektiv. Studien använder sig av ett utvidgat utfallsmått, förutom sjukhusvård för alkoholrelaterad sjukdom tas också hänsyn till vård för akut intoxikation/alkoholförgiftning samt alkoholrelaterad kriminalitet, dvs. rattfylleri. Studien visade att alkoholrelaterade problem var generellt vanligare bland män än bland kvinnor, men att denna könsskillnad var starkt beroende av utfallsmått. Medan skillnaden var mycket liten med avseende på vård för intoxikation så var det mer än nio gånger så vanligt bland män att lagföras för rattfylleri. Sambandet mellan socioekonomiska faktorer och alkoholutfall skiljde sig inte nämnvärt mellan könen. För både män och kvinnor var låg socioekonomisk bakgrund något starkare kopplat till rattfylleri än till vård för alkoholrelaterad sjukdom eller intoxikation. I likhet med tidigare studier försvagades kopplingen mellan socioekonomiska faktorer och utfallen efter att resultaten justerats för föräldrarnas psykosociala problem och skolbetyg. Studien undersökte slutligen den kombinerade effekten av manligt kön och social utsatthet. Jämfört med kvinnor med föräldrar i hög tjänstemannaposition hade män från låg socioekonomisk bakgrund genomgående en förhöjd risk för alkoholrelaterade problem, men risknivån var åter igen starkt kopplad till utfallet. Vård för intoxikation var dubbelt så vanligt, vård för alkoholrelaterad sjukdom nästan fyra gånger så vanligt och rattfylleri var nästan 24 (!) gånger vanligare i denna grupp jämfört med referenskategorin.

## **9.2 Diskussion**

Social utsatthet i barndomen tar sig olika uttryck. Studierna behandlar tre tätt sammankopplade dimensioner av social ojämlikhet; föräldrarnas socioekonomi, skolresultat och familjemiljö, samt analyserar dessa dimensioner ur ett genusperspektiv. I avhandlingen diskuteras dessa resultat med hjälp av ett antal teoretiska ansatser hämtade från sociologi, folkhälsovetenskap och socialepidemiologi.

Alkoholrelaterad sjukdom kan i huvudsak förklaras av två (ofta samspelande) faktorer: hög exponering och hög sårbarhet för alkohol. För att analysera exponering för alkohol, det vill säga alkoholkonsumtion, behövs annat datamaterial än svenska register som endast innehåller variabler rörande drickandets konsekvenser (t.ex. alkoholrelaterad vård, död och kriminalitet). Studiernas resultat kan emellertid jämföras med Folkhälsomyndighetens årliga representativa enkäter som förutom information om alkoholkonsumtion innehåller en rad sociala och demografiska variabler. Enkäterna

rapporterar mycket små socioekonomiska skillnader i alkoholkonsumtion, såväl med avseende på totalkonsumtion som på riskdrickande. Bland män är riskbruket av alkohol något förhöjt i lägre socioekonomiska grupper medan kvinnors alkoholkonsumtion är oberoende av socioekonomiska variabler såsom inkomst, utbildning och anställningsform. De blygsamma skillnaderna i alkoholkonsumtion står inte i proportion till de tydliga skillnaderna i alkoholrelaterad ohälsa. Detta gör det mer troligt att studiernas resultat kan förklaras av skillnader i sårbarhet, snarare än av skillnader i exponering för alkohol. Sårbarhet för alkohol brukar inom medicinen syfta på genetisk sårbarhet, men då det inte finns några genetiska skillnader mellan sociala grupper ligger det närmare till hands att studiernas resultat kan förklaras av skillnader i social sårbarhet för alkohol.

Frågan hur barndomsfaktorer är kopplade till sociala skillnader i sårbarhet för alkohol är komplex. En möjlig förklaring ligger i den direkta effekt som social utsatthet kan ha för ohälsa senare i livet. Ekonomiska problem kan vara kopplade till otillräcklig eller näringsfattig kost, osäkra boendeförhållanden eller otillräcklig sjukvård vilket får långsiktiga konsekvenser för en människas allmänna hälsotillstånd, vilket i sin tur gör henne sämre rustad för den påfrestning alkoholkonsumtion innebär. Föräldrars missbruk kan överföras på barn genom ett samspel mellan genetiska och sociala faktorer. Missbruk och andra faktorer som antyder dysfunktionell familjemiljö är även kopplade till psykisk ohälsa bland barnen. Senare i livet kan alkoholen finnas där som ett lättillgängligt medel för att handskas med de spår som barndomsupplevelserna har lämnat. Sambandet mellan sociala barndomsfaktorer och hälsa senare i livet kan också vara indirekt. Denna förklaringsmodell fokuserar ofta på skolans betydelse och visar att barn från olika uppväxtmiljöer har olika möjligheter att lyckas bra i skolan. Barn från privilegierade förhållanden har välbetalda och välutbildade föräldrar som har goda förutsättningar att hjälpa till med läxor eller betala för läxhjälp. Då den socioekonomiska sammansättningen i svenska skolor blir allt mer homogen samtidigt som prestationsskillnaderna mellan skolorna ökar blir skolvalet av stor betydelse. Det fria skolvalet är förvisso formellt öppet för samtliga elever och föräldrar, men hinder i form av språkförbistringar, långa resvägar eller diskriminering är sannolikt inte en lika stor begränsning för familjer med goda resurser. Ett gott skolresultat öppnar sedan dörrar för en bra gymnasieutbildning, universitetsutbildning, ett välbetalt jobb och goda förmåner. Den sociala positionen går med andra ord i arv och därmed också en mer eller mindre påtaglig sårbarhet för potentiellt hälsovådlig alkoholkonsumtion. De resurser som en hög social position för med sig kan till viss del kompensera för en hög konsumtion medan avsaknaden av resurser gör personer i utsatt social position mer sårbara för drickandets negativa effekter. Det faktum att den relativa risken mellan hög- och lågpresterande var större bland dem som växte upp i privilegierade förhållanden

kan möjligen förklaras av bakomliggande faktorer som inte kunnat mätas i studierna. Om någon trots goda socioekonomiska förutsättningar får låga betyg kan detta tyda på att personen i fråga har andra problem som är kopplat till både låg skolprestation och missbruk senare i livet. Neuropsykiatriska funktionsnedsättningar som ADHD eller utsatthet i skolan och mobbing är faktorer som också kan förklara kopplingen mellan låga betyg och alkoholrelaterad sjukdom.

Till skillnad från den sociala ojämlikheten, som kan antas vara kopplad till skillnader i sårbarhet, kan könsskillnaderna i alkoholrelaterad ohälsa förklaras av skillnader i exponering då män som grupp dricker mer än kvinnor. Orsaken till detta kan antas ligga i samhälleliga normer och socialiseringsmönster som uppmuntrar drickande bland män medan hög alkoholkonsumtion bland kvinnor kan vara mindre socialt accepterat. Detta fenomen kan även kopplas till diskussionen kring alkoholmissbruk som ett utlopp för bakomliggande social eller psykisk problematik. För många män ligger alkoholen möjligen närmare till hands medan kvinnor i högre grad bemöter likartade bakomliggande problem med andra medel. Liksom övriga samband i avhandlingen gäller denna tolkning endast för grupperna män och kvinnor och bär ingen giltighet på individnivå. Faktumet att missbruk är vanligare bland män får inte leda till bortprioritering av de många kvinnor som har alkoholproblem.

### **9.3 Slutsatser**

Sambandet mellan social ojämlikhet i barndomen och alkoholrelaterade hälsoskillnader i vuxen ålder kan beskrivas som ett förkroppsligande av sociala privilegier och utsatthet. Förkroppsligandet som fenomen kännetecknar den process under vilken den fysiska och sociala miljön lämnar ett avtryck i människors kroppar vilket har hälsokonsekvenser som en naturlig följd. Förkroppsligandet av social ojämlikhet gör människor mer eller mindre sårbara för alkoholens hälsovådliga effekter och kan bidra till förklaringen av de stora alkoholrelaterade hälsoskillnader som finns i Sverige.

Liksom många andra studier kring ojämlikhet i hälsa understryker detta arbete den stora betydelse skolan har för hälsa i vuxen ålder. Faktumet att de socioekonomiska skillnaderna helt försvann efter att resultaten justerats för skolbetyg är både nedslående och hoppingivande. Resultatet kan tolkas som att de sociala skillnaderna i hälsa förklaras av sociala skillnader i skolprestation. Att skolor blir mer och mer socioekonomiskt homogena samtidigt som betygsskillnaderna mellan skolor växer är därmed oroväckande ur ett folkhälsoperspektiv. Denna utveckling kan leda till att skolan blir en arena där social ojämlikhet reproduceras och förstärks, snarare än motverkas. Resultatet kan emellertid också tolkas som att goda skolbetyg kompenserar

för låg socioekonomisk bakgrund – om ett barn lyckas bra i skolan spelar familjebakgrunden inte någon roll. Skolan har en enorm kompensatorisk potential och strategier som främjar en god och likvärdig skola är viktiga för hälsojämlighet i vuxen ålder.

Mäns risk för alkoholrelaterad sjukdom är ungefär tre gånger högre än för kvinnor. Därmed är männens relativa risk jämförelsebar med ojämlikheten mellan socialt privilegierade och utsatta grupper, med den viktiga skillnaden att mäns överrisk är orsakad av högre konsumtionsnivåer och inte högre sårbarhet. Att eftersträva en jämlik hälsa betyder underförstått att den grupp med störst hälsoproblem eller hälsovådligast beteenden närmar sig den grupp med färre problem, inte tvärtom. I detta fall innebär det att det vore eftersträvansvärt om män som grupp kunde anpassa sin alkoholkonsumtion till nivåer som oftare återfinns bland kvinnor. Skolenkäter kring ungdomars alkoholkonsumtion är upplyftande i det här avseendet. Centralförbundet för Alkohol- och Narkotikaupplysning (CAN) rapporterar att 2014 var andelen niondeklassare som dricker alkohol den lägsta sedan mätningarna började 1971. Dessutom var andelen pojkar som dricker lägre än andelen flickor. Strategier för att minska alkoholmissbruket bland män skulle kunna ta hänsyn till de faktorer som har bidragit till en förhållandevis låg alkoholkonsumtion bland tonårsskilar och undersöka huruvida dessa kan vara relevanta även senare i livet.

Ett stort antal folkhälso-, social- och utbildningspolitiska åtgärder kan bidra till att närma sig jämlikhet i möjligheten att leva ett liv utan alkoholrelaterad sjukdom. Detta är något som den nybildade nationella kommissionen för jämlik hälsa har goda möjligheter att ta i beaktande. En samlad och effektiv strategi mot alkoholrelaterad ojämlikhet i hälsa har goda förutsättningar att gynna hälsan och välbefinnandet både i nuvarande och i kommande generationer.

# Acknowledgements

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A large number of people have helped me throughout this project and I am deeply grateful to them.

My main supervisor Anders Hjern has supported my work since day one and taught me a lot over the past years. His excellent guidance and generosity has made my time as a PhD student not only professionally rewarding, but also highly enjoyable

My co-supervisors Tomas Hemmingsson and Peter Allebeck for their support, worthwhile discussions and fruitful co-authorship

Jennifer Ahern for valuable conversations, an excellent course in social epidemiology and for enabling me a wonderful stay as a visiting student researcher at UC Berkeley

My other co-authors Bo Vinnerljung, Emma Björkenstam and Lisa Berg for pleasant collaboration and all their excellent comments

My officemate Andrea Dunlavy for all her support and friendship

Bitte Modin for all her good advices and outstanding mentorship

Andrea Dunlavy, Natalie Holowko, Louise Kay, Devin Oliver and Lisa Lee Axelsson for their American, Australian, British and Swedish proofreading and for giving the language some essential flavo(u)r and colo(u)r

The CHESS leadership, members of the PhD graduate school and all the other colleagues for offering such a stimulating work environment

The social epidemiology group at the KI public health department for valuable comments and conversations

My heartfelt gratitude to my extended family of friends and loved ones in Stockholm and Gothenburg who have helped, supported and inspired me in so many ways

To my friends in Germany, UK and America for offering welcome breaks and escapes

To my sister Hanna for intellectual and political inspiration

To my mother and father for their invaluable support throughout my entire life

Thank you





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